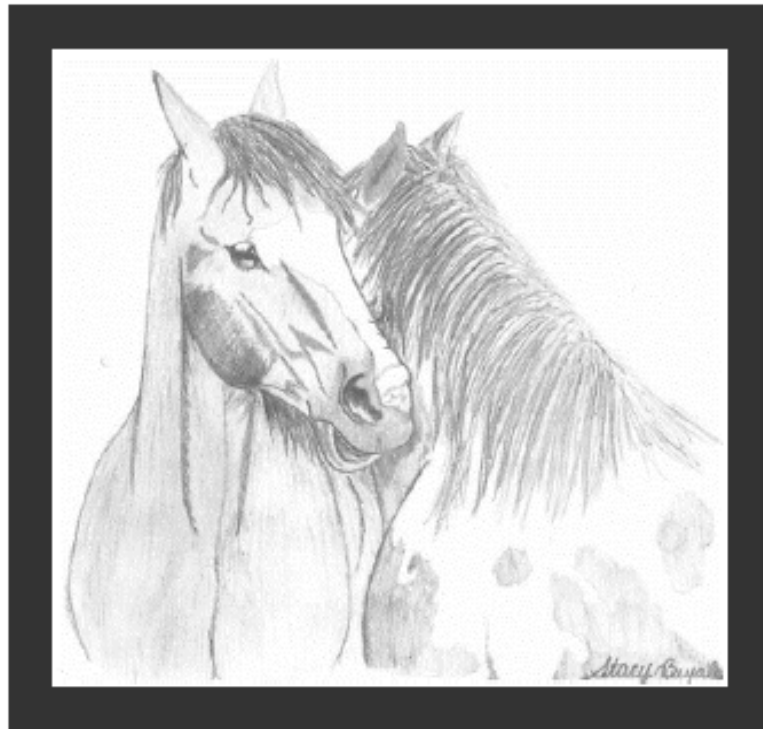




COLORADO STATE UNIVERSITY
EXTENSION

MA1500F
Member's Manual



4-H Horse Project

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Terminology that is gender specific, such as horseman or cowboy, reflect common usage in the industry. No discrimination is intended.



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WHAT IS THE 4-H PROJECT?

The purpose of the 4-H Horse Project is to help you learn how to properly care for and enjoy your horse while developing Life Skills. Through the 4-H Horse Project, you can increase your knowledge and improve your horsemanship skills by learning basic safety and handling principles.

As a member in the 4-H Horse Project, you will learn about your own horse, other horse breeds, safety, body colors and markings as well as health and care. You will also learn about facilities, grooming, training, judging, equipment, saddling and bridling, basic horsemanship and showing techniques.

A good horsewoman or horseman can self-train, in addition to training horses. You will develop respect for your horse, responsibility in caring for your horse and discipline in the way you handle horses. You will also develop patience in training, neatness in your own and your horse's appearance and pride in yourself.

You can participate in several activities through the 4-H Horse Project, including: western and English riding, horse safety, horse judging, horse bowl, horse demonstration, horse public speaking, hippology, Competitive Trail Riding and Ranch Horse Versatility, riding for the disabled and for members without a horse, the horseless horse project is available. Once enrolled in the horse project, you can choose any or all these options.

Basic Requirements of the 4-H Horse Program

The member must:

- Own or lease one or more horses (light horse, pony, draft donkey or mule); see lease agreement details in the Colorado 4-H Rule Book. Horses must be identified with the State 4-H Horse Identification Sheet by May 1st of the current year.
- Feed, care for, groom, exercise and assume the responsibilities for your horse when possible.
- Keep accurate records and note project progress in the 4-H Horse Project Record Books for horses that you have identified with a horse project ID form.
- Exhibit or participate with your 4-H Horse Project horses during the 4-H year.
- It is recommended that you give a Demonstration or Speech, or participate in Horse Judging, Horse Bowl, Hippology or other 4-H activities (at least at the club level). These activities are NOT limited to members owning horses or members enrolled in the horse project any 4-H member may participate.

**These rules do not apply to the Horseless Horse Project.*

Being a top horseman or horsewoman requires learning all you can about horses and setting and achieving goals for you and your horse. With humane training methods, a well-trained horse will respond to your wishes and give you its best.

Additional information is available to 4-H Horse Project members and leaders from the Colorado State University Extension Office or your county Extension office. The State 4-H website <http://www.colorado4h.org/> also provides information. Available literature includes Colorado 4-H Horse Show Rule Book, 4-H Horse Project E-record Book, as well as others please check with your local Extension office for a complete listing of publications and an order form.

Other suggested publications and books:

- *The Horse*, by J. W. Evans, A. Borton, H. Hintz, and L. D. Van Vleck, Second Edition, Freeman Company, New York.
- *Feeding and Care of the Horse*, Lon Lewis, Second Edition, Williams & Wilkins, Media, PA.
- *Horse Industry Handbook*, American Youth Horse Council, Louisville, KY.

**When I Compete
(4-H rule while competing at events)**

*My performance goal is never only to beat someone else.
I respect and learn from other competitors more skilled than myself.
I don't criticize other competitors, officials or judges.
I do my best always.
I have fun.
I stay home if I can not follow the above rules.*

Humane Policy Statement for 4-H Horse Project

It is the responsibility of every 4-H member to ensure that proper care is taken of their horse according to acceptable methods of good equine husbandry, as set forth by Colorado State University Extension and the Colorado Department of Agriculture. A healthy horse requires sufficient food, water, shelter and correct health care. Cruel and inhumane training methods are not appropriate in the Colorado State Extension 4-H Horse Program. Specific equine husbandry guidelines and humane training methods are provided in this *Colorado 4-H Horse Project Manual*.

Protective Headgear Policy

A certified equestrian helmet with safety harness fastened in place is required in all activities and practice sessions associated with over fence classes and gymkhana (i.e., timed events not involving livestock). It is the responsibility of the parent or guardian of the 4-H member to see that the headgear worn complies with such standards and is in good condition. **The State 4-H Office encourages the use of ASTM certified/SEI approved safety helmets in all equine events. Protective headgear may be used in all classes and shall not be discriminated against.**

BREEDS

What is a breed?

A breed is a group of animals with a common origin. Each group, or breed, has definite breed characteristics not commonly found in other breeds. These characteristics are fixed in the genetic makeup of the breed and will be passed from parents to offspring. Many 4-H'ers can identify Chevrolets or Fords by body styles. You can recognize horse breeds the same way.

Some popular pleasure breeds found in Colorado include Quarter Horse, Arabian, Appaloosa, Morgan, Thoroughbred, American Saddle Horse (Saddlebred) and Paint Horse. Popular pony breeds for smaller riders are Shetland, Welsh, and Pony of the Americas (POA). Horses that are crossbred are produced from mating horses of two or more breeds. You will find more information in Table 1 about many of the breeds in Colorado.

When you learn to recognize breed characteristics, you will be able to identify whether a horse is a Thoroughbred, Arabian, or Quarter Horse. You will soon be able to tell when certain breed characteristics appear in crossbred horses.

Horse Classifications

Stock Horse

These horses are short-coupled, deep-bodied and well muscled. They were developed to work cattle and often compete in rodeo. Quarter horse, Appaloosa, Arabian, Paint, Morgan or POA usually predominate stock horse breeds. Their easy-going gaits are the walk, jog, and lope.

English Style

Horses of this type are found in all light breeds. Their walk, trot and canter are popular for pleasure riding. English pleasure horses usually are more angular than stock horses and have more extreme style and action. Some of the popular breeds are Saddlebred, Morgan and Arabian

Hunter

A hunter is a large, clean-cut horse bred for cross-country riding and jumping. It moves boldly and briskly and has a long, purposeful stride. They usually are thoroughbreds or crossbreds selected for stamina, speed and surefootedness.

Ponies

Ponies are small horses 14.2 hands or less in height at maturity. Most common are the Shetland and the medium-sized Welsh pony. Small Welsh ponies are 12.2 hands or less, medium Welsh ponies are those over 12.2 hands up to 13.2 hands and large Welsh ponies are over 13.2 hands up to 14.2 hands. These two breeds often are crossed with Arabians, Morgans, and other breeds of light horses to produce larger, more spirited ponies. The POA is the result of cross breeding an Appaloosa with a Shetland. Hackney ponies are noted for their high-trotting action and light carriage use.

Sporhorses (warmbloods)

Some of the popular breeds are Holsteiner, Trakehner and Hanoverian. These breeds are used for dressage, jumping, combined training and combined driving. The warmbloods combine the Thoroughbred and Arabian breeds with draft breeds (cold bloods).

Gaited Horses

These horses have an unique gait that results in a smooth and comfortable ride. Each breed has a specific synchronous lateral gait that is characteristic to the breed. Some gaited breeds are Paso Fino, Peruvian Paso, Tennessee Walking Horse, Missouri Fox Trotter and Rocky Mountain Horse.

Registered

These are horses belonging to a specific breed with registration papers documenting the horse's ancestors. Some registered breeds are considered purebreds. Other breeds of horses have open registries.

Crossbred

A crossbred is a horse that combines the characteristics of two or more breeds.

Color Breeds

These are breeds of horses that are bred for their coat colors or markings. Some color breeds are Pintos, Paints, Palominos, and Buckskins. These horses can sometimes be registered with more than one association.

Draft Horses

These breeds are heavily muscled horses used as workhorses. They stand 16 hands or taller and weigh 1,600 pounds or more. Some breeds of draft horses are Percherons, Belgians, Shires, Clydesdales and Suffol

Some Breeds of Horses

Arabian



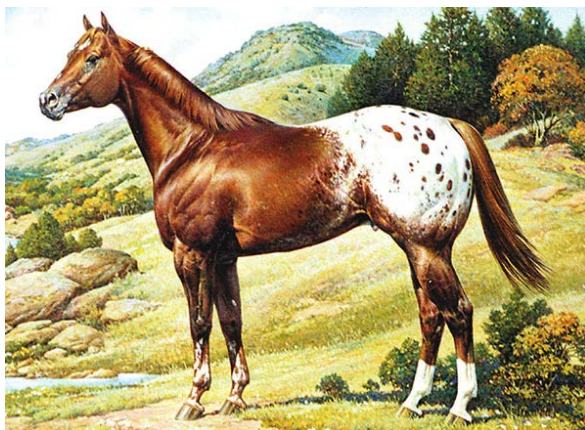
Identified by a finely-chiseled head and dished face, long, arching neck, high tail carriage and light build. They stand 14.1 to 15.2 hands tall and weigh 800 to 1,100 pounds. Coat colors are gray, black, chestnut, and bay. The Arabian is the oldest breed of horse, developed more than 3,000 years ago. Arabians originated in the Middle East or North Africa. The Arabian is the foundation breed for all modern breeds of horses. They are used for general purpose riding and show.

Its well-muscled, compact and very powerful build is what gives the American Quarter Horse the ability to gain speed in a matter of seconds. Quarter Horses originated in the United States; the Quarter Horse is said to have run in colonial America for sport. The Quarter Horse ranges from a height of 14 hands to more than 17 hands, averaging 15 hands. Their use is determined by their physical stature; they can be used for anything from cattle events to English pleasure, depending on the horse. They range in color from golden palomino to bay and sorrel. White markings on the head and lower legs are acceptable. Quarter Horses can also be gray and roan.

American Quarter Horse



Appaloosa



Identified by their coat patterns, most Appaloosas are spotted. However, non-spotted Appaloosas can be registered and shown. Most Appaloosas are between 950 and 1,250 pounds and 14 to 16 hands tall. They are used for general purpose riding and show. The Appaloosa Horse Breed recognizes four identifiable characteristics of Appaloosa markings (see page 12, Appaloosa coat patterns).

Morgan Horse

The **Morgan** horse breed is descended from one horse, named "Figure," born in 1789 and owned by Justin Morgan. Today more than 125,000 Morgans are recorded. Morgan horses are compact and muscular yet refined. They have an upheaded, stylish, spirited gait. The Morgan averages 14.2 to 15.2 hands in height and is usually bay, brown, chestnut or black, but can be buckskin, palomino or gray. They are used for general purpose riding and show.



American Paint Horse

These horses are mainly bred for their color markings and are a recognized breed. The Paint or Pinto characteristic may appear on any base color and is a combination of white and colored markings. The two most common patterns are *tobiano* and *overo*. **American Paint** horses must be out of a sire and dam that are APHA registered, carry a paint pattern gene, and have paint color characteristics. Paints are stock type horses.



Tobiano



Overo Pinto Horse

Pinto horses are bred for their color, and the two-color patterns are **tobiano and overo**. Pinto horses are spotted horses of any size and approved outcross breed that meets the pinto color requirement (a minimum amount of white with pink skin underneath, depending on the horse's size, that is above the horse's knee or hock and not on the face) and is registered in the Pinto Horse Association of America. There are four combination types of Pintos: saddle, stock, pleasure and hunter characteristics.

Thoroughbred Horse

The **Thoroughbred** originated in England as a middle-distance racehorse. The Jockey Club is the official breed registry for all Thoroughbreds born in the United States. The most common coat colors are bay, brown, black, chestnut and occasionally roan or gray. White markings on the face and legs are common. Thoroughbreds are known for their long stride and are used for flat-track racing, polo, hunting or general-purpose riding and show.

Table1. Horse breeds that can be found in Colorado

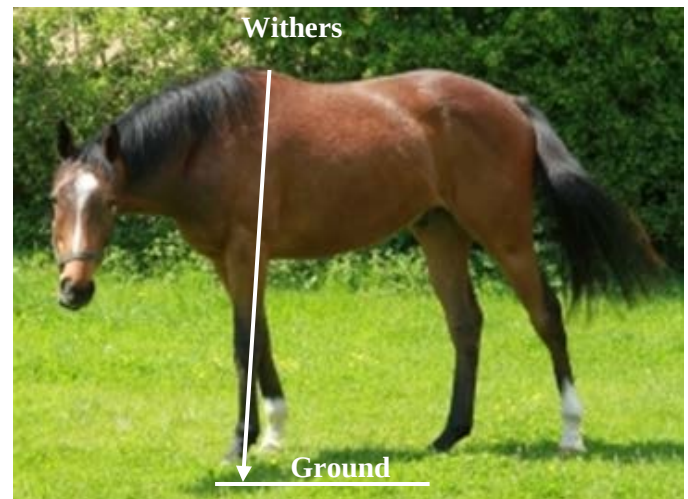
Breed	Origin	Color	Characteristic	Primary Uses
Akhal-Teke	Russia	metallic, gold, gray, bay	stands 14.2 -15.2 hands	riding, racing, dressage
American Saddlebred	Kentucky (Fayette County)	bay, brown, chestnut, black, gray, pinto, buckskin	Stands 15-16.5 hands, long, and graceful neck, proud leg action, comfortable easy ride	three and five gaited, fine-harness, pleasure, stock, dressage
Andalusian & Lusitano	Spain and Portugal	gray, bay, rare blacks, palomino, buckskin, chestnut	well-muscled, 15 to 16.2 hands, strong arched neck, noble head, long elevated strides, great for collection	parade, dressage, trail, jumping, pleasure, driving
Appaloosa	Oregon Washington Idaho	variable, often white over loin and hips with dark, egg shaped spots; other patterns or solid	eye is encircled by white, skin is mottled, and hoofs are striped vertically black and white	cow horse, pleasure, parade, racing
Arabian	Arabia, Middle East or North Africa	bay, gray, chestnut some white or black (white is registered as gray)	Finely chiseled head, dished face, long arching neck and high tail carriage, short back, high-spirited, good endurance	show, pleasure, stock, saddle, racing, endurance
Belgian	Belgium	Predominately blonde, sorrel, roans with light points and chestnut	15.3-16.3 hands (can be taller), great strength	draft work, shows
Buckskin	United States	buckskin, red dun, grulla	dorsal stripe on back and sometimes stripes on legs	cow horse, pleasure, show
Cleveland Bay	England (Yorkshire)	solid bay with black legs	larger than most light horse breed, stands 16-16.2 hands	riding, driving, farm (also cross bred to produce hunters)
Clydesdale	Great Britain	bay, brown, gray, black	white on face and legs, legs carry profuse feather, stands an average 16.2 hands	farm work, promotion and advertisement
Connemara	Ireland	gray, black, bay, dun, brown, cream, roans & chestnuts	stands 13-14.2 hands	jumpers, saddle and harness shows
Dutch Warmblood	Netherlands	any color	16.0+ hands	jumping, dressage, combined driving
Norwegian Fjord	Norway	dun with a dorsal stripe, dark bars on legs	13-14.2 hands, compact muscular body	riding, driving, draft purposes, pleasure, jumping, dressage
Friesian	Netherlands	always black, no white markings, only a small star allowed	stand average 15+ hands, compact, muscular, strong body, w/feathering lower legs	all-around working horse, circus horse, dressage, carriage driving
Hackney	England; on the eastern coast in Norfolk and adjoining counties	chestnut, bay, and brown, most common although roans and blacks are seen; white marks are common and desired	In the showring, custom decrees heavy harness horses be docked and have their manes pulled; high natural action	heavy harness, carriage, cross-breeding purposes to produce hunters and jumpers
Hanoverian	Germany	any solid color	16.0+ hands	dressage, jumping, sport horse
Hungarian Horse	Hungary	all colors, either solid or broken	style and beauty with ruggedness	cow horse, cutting, pleasure, trail riding, hunter, jumper
Miniature Horse	United States	all colors, either solid or broken	stands up to 8 hands, fine distinct horse-type features	pets, circuses, show

Breed	Origin	Color	Characteristics	Primary Uses
Missouri Foxtrotter	Missouri Arkansas (Ozarks)	sorrel, gray, brown, black, bay	Brisk walk with front legs and trot with back legs, called the fox trot gait	all-around riding, used in U.S. Forest Service Districts
Morgan	United States	bay, chestnut, brown, black	good endurance, strong versatile, stands average 15.2 hands	all-around riding, show ring under saddle and harness
Mules	Spain	sorrel, gray, brown, either solid or broken	stands 12 to 17.2 hands tall. Large, well set ears	all-around riding, driving, pack animals
Mustang	United States	any color, coarse	13.3-15 hands	original cow pony, used by American Indians, now for general riding
National Show Horse	United States; Saddlebred, and Arabian Cross	all colors	refinement, stamina of the Arabian, size and high- stepping action of the Saddlebred	Show ring under saddle, and halter
Paint	United States	tobiano or overo coat color pattern	breeding for coat color. Must be of stock horse type and breeding	all-around riding, show ring, pleasure
Paso Fino	Peru, Puerto Rico, Cuba, Columbia	any color, although solid colors are preferred	walking and trotting is natural; gaited and very comfortable	pleasure, parade, show, endurance, working horse
Percheron	France	gray or black	stand 15.2-17 hands, powerful with stamina and endurance, but fine head, beauty and grace of movement	draft and farm work, pulling contests
Peruvian Horse	Peru	any color, but solid colors are preferred	natural, smooth gaited walk and trot that is comfortable to ride	pleasure, parade, endurance, show, working horse
Pinto	United States, from horses brought in by Spanish conquistadores	half color or colors and half white, many spots well placed, two distinct pattern markings of overo and tobiano	glass eyes not discounted, separate registry for ponies and horses under 14 hands	any light horse purpose, especially show, parade, novice, pleasure, stock horse
Pony of Americas	United States: Mason City, IA	like Appaloosa, white over the loin and hips, with dark, round, or egg-shaped spots	happy medium to Arabian and Quarter Horse in miniature, ranging in height from 46-54 inches	youth western type pony, show, all-around riding, driving
Quarter Horse	United States	chestnut, sorrel, bay, dun, palomino, black, brown, roan, copper	well-muscled, powerful build, small alert ear; sometimes heavily muscled cheeks and jaw	cow horse, racing, pleasure, hunters, jumpers, cutting, reining, roping, barrel racing
Rocky Mountain Horse	Eastern Kentucky	all colors, must be solid, no white above the knee or hock	stands 14.2 -16 hands tall, natural, ambling, four-beat gait	pleasure, trail riding, endurance riding, working cattle
Shagya Arabian	Syria	gray	usual Arabian characteristics, stands around 15 hands	all-purpose riding and sometimes harness
Shetland Pony	Shetland Islands	black, bay, brown, gray, chestnut	not more than 10.2 hands	child's horse, driving
Shire	England (medieval times)	bay, brown, gray, black	stands 18 hands, weighs up to one-ton, strong, big, long legs, heavy feathering	farm work, draft work, show ring

Breed	Origin	Color	Characteristics	Primary Use
Standardbred	United States	bay most common but all solid colors	15.2+ hands, longer back, good stamina	driving and racing
Tennessee Walker	Tennessee	black, bay, chestnut, grey	four-beat gait walking and trotting, stands 15-15.2 hands	saddle and harness shows, all-around riding
Thoroughbred	England	brown, bay, chestnut, or any other solid color	stands 14.2-17 hands, fine head, elegant neck, sloping shoulder, powerful haunches	racing, hunting, pleasure, jumping, dressage
Trakehner	Germany	any solid color	usually 16-16.2 hands	dressage, jumping
Welsh Pony	Wales	any color except piebald and skewbald, gaudy white markings are not popular	small size, 12.2-14 hands	children, small adults, harness, racing, parade roadsters, trail riding, stock cutting, hunting
<i>Donkey:</i> Jacks and Jennets	Domesticated in Egypt	black with lighter colored nose, red, gray	compared to horses, are smaller, shorter hair on mane and tail, no chestnut on inside hind legs, low ears, smaller and deeper hoofs, and harsh voice (bray), less subject to founder or injury, hardier	crossing with horses to produce mules; purpose include riding, driving and show ring

How Tall is my Horse?

The unit of measurement used to define a horse's height is a hand. A hand is equal to four inches. A horse's height is measured from the ground to the top of the withers. A horse that measures 61 inches from ground to withers is 15.1 hands, or 15 hands and 1 inch tall. A pony measures 14.2 hands or less while a draft horse measures around 16 to 17 hands tall.



COLORS & MARKINGS

Body Colors

There are terms used for various body colors and markings to correctly describe or identify a horse. Color descriptions describe body colors of many horse and pony breeds. Each breed has preferred colors which are stated in the literature available from the respective breed associations.

Bay

Body color ranges from tan to red, to reddish-brown or mahogany; mane and tail are black. Usually lower legs are black.

Black

A true black is without brown areas. Black mane and tail. Can have white markings.

Brown

Body color is brown or black with light areas at muzzle, eyes, and flanks and inside upper legs, mane and tail are black.

Buckskin

Body color is yellowish or gold. Mane and tail are black, and usually black lower legs. No dorsal stripe.

Chestnut or Sorrel

Body color is dark-red or reddish-brown. Mane and tail usually are the same color as body but may be flaxen. Color varies from bright yellowish to red or rich mahogany.

Cremello

A double dilution of chestnut with off-white or cream body and even lighter mane and tail. Also called type A albino, but it is not a true albino.

Dun

Body color is yellowish or gold; mane and tail are black or brown. Must have a dorsal stripe and often have zebra stripes on legs and a transverse stripe over withers.

Gray

Mixture of white and black or other colored hairs, usually born solid-colored or almost solid colored and gets lighter with age.

Grullo or Grulla

Body color is smoky or mouse-colored, not a mixture of black and white hairs – each hair is mouse-colored. Mane and tail are black, usually lower legs are black. Has a dorsal stripe and may have zebra stripes on legs.

Palomino

Body color is golden-yellow, with a white mane and tail.

Perlino

Double dilution of bay with off-white or pearl body and rust-color tips on the mane, tail, and sometimes on lower legs. Also called type B albino, but it is not a true albino.

Red Dun

This is a form of dun with body color solid-yellowish or flesh-colored. Mane, tail, and dorsal stripe are red.

Roan

Blue roan is a somewhat uniform mixture of white with black hairs over the body, usually with a few red hairs. Red roan is more or less a uniform mixture of white with red hairs on the body, usually darker on the head and lower legs. This color will not change with age.

White

White horses have unpigmented skin and a white hair coat. Many white horses have dark eyes, though some have blue eyes. In contrast to gray horses which are born with pigmented skin they keep for life and pigmented hair that lightens to white with age, truly white horses are born with white hair and mostly pink, unpigmented skin.

Markings

In addition to its body color, a horse's markings are used to identify a horse. For example, to better identify a horse that is dark sorrel, include its markings such as white blaze and three white socks. There is a variety of common markings. Learn their names from the figures below.

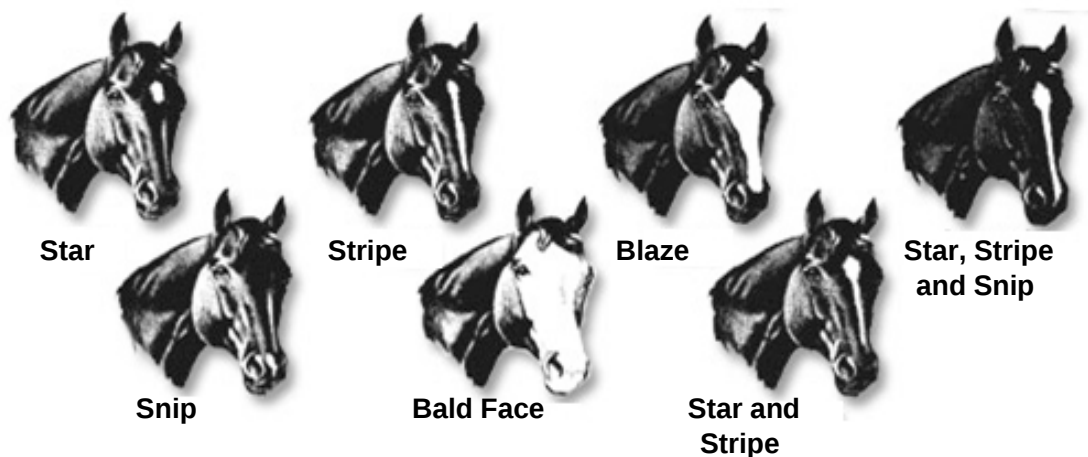


Figure 1: Head Marking

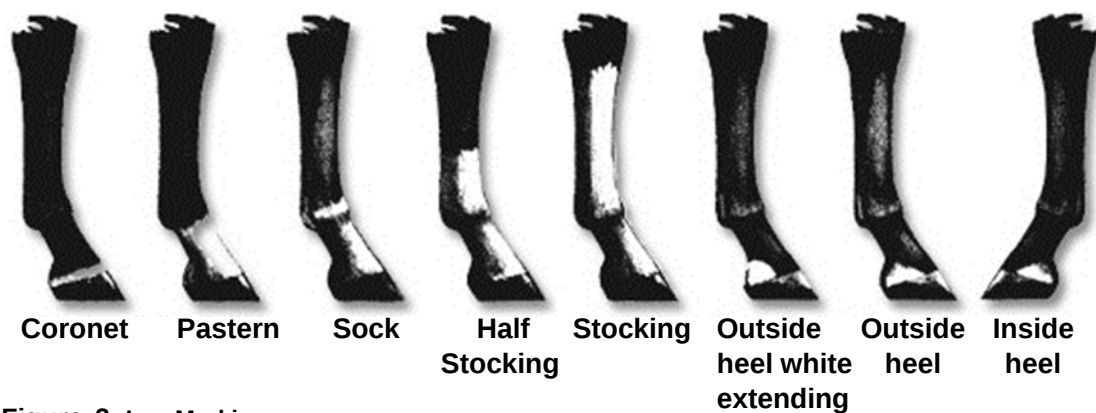


Figure 2: Leg Markings

Other Markings

Appaloosa Coat Patterns

The appaloosa horse breed recognizes four identifiable characteristics of Appaloosa markings. Appaloosa patterns may appear on any basic coat color. Appaloosa horses can have spotted coat patterns such as leopard (white with spots over the entire body), or a blanket which is a white patch covering the horse's hip with or without spots on the blanket. In addition to coat patterns, Appaloosas have mottled skin (speckled) on their nose and under their tails, white sclera around the eyes (area encircling the pupil) and have striped hooves. Appaloosas may be solid colored with the other characteristics present.



Black Points

Characteristics are a black mane and tail and extremities of the body (ears, muzzle, legs, etc.).

Paint or Pinto

Paint or pinto characteristic may appear on any base color and is a combination of white and colored markings. The two most common patterns are below.

- The **tobiano** (*toe-bee-ah'-no*) horse will usually have head markings like a solid-color horse. Generally, all four legs are white. Body markings are often regular and distinct oval or round patterns that extend down over the neck and chest, giving the appearance of a shield. The tail is often two colors.
- The **overo** (*oh-ver'-oh*) horse often has a bald face and at least one leg will be dark in color. Body markings are usually irregular, scattered or splashy white markings, often called calico patterns that commonly do not cross the back between the withers and tail. The tail is usually one color. Glass or blue eyes are more prevalent in overos than in tobianos.



Ray or Dorsal Stripe

The ray or dorsal stripe is a darker line found down the backbone of some horses.

Transverse Cross

The transverse cross is a dark stripe (same color as dorsal stripe) that runs perpendicular across the withers.

Zebra Marks

Zebra marks are dark stripes that run horizontally on the forearm, knees and cannon.

PARTS OF THE HORSE

The parts of a horse are shown in Figure 3. Learn and use the correct terms for parts of the horse.

Points and Skeleton of the Horse

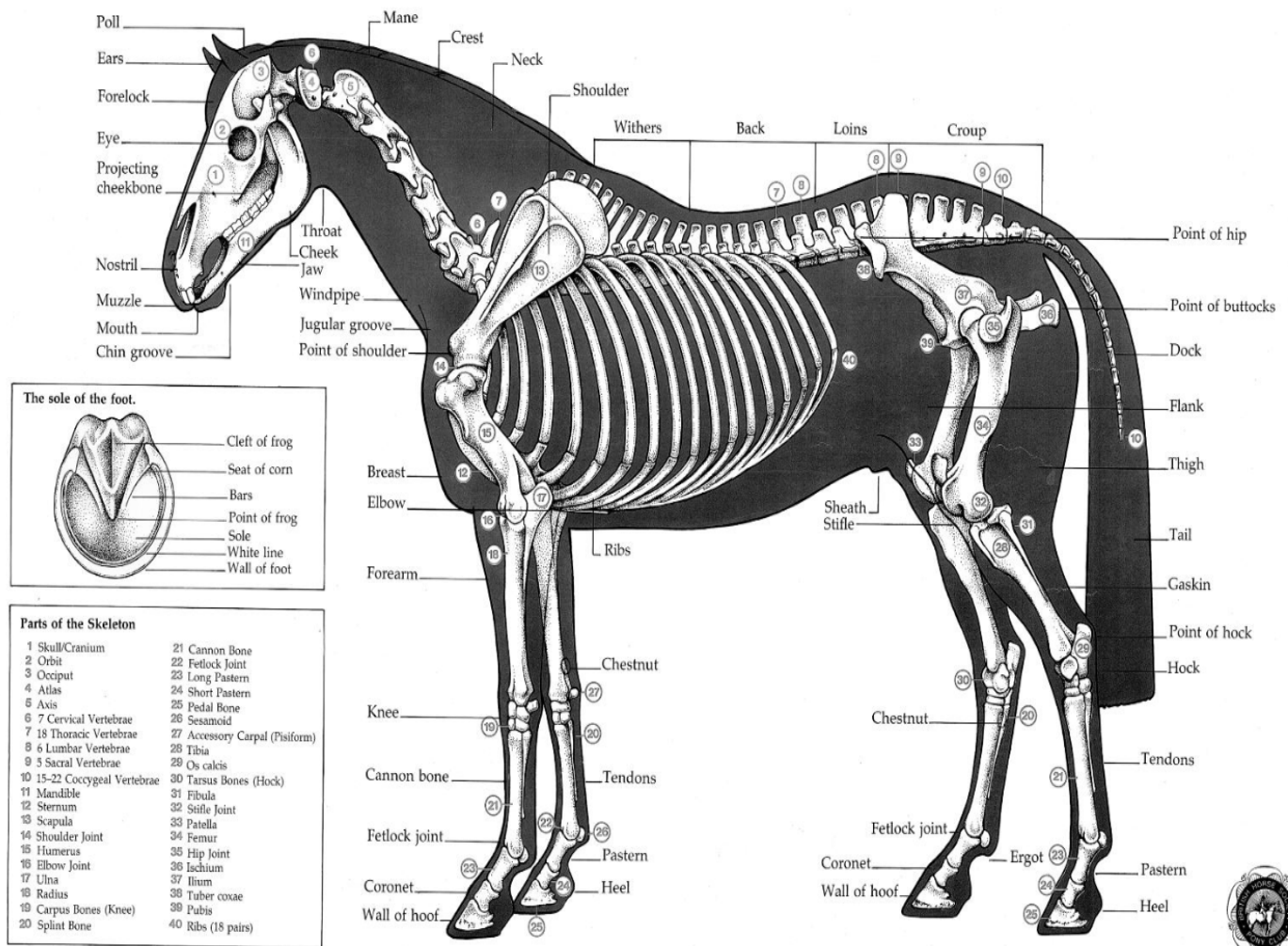


Figure 3. Parts of the Horse

TEETH & DETERMINING A HORSE'S AGE

Look at the horse's front teeth to judge its age. The following illustrations provide simple clues that determine the age of a horse. Practice judging a horse's age with help from an experienced person.

A mature male horse has 40 teeth. There are 12 front teeth called incisors, 4 canine teeth, 12 premolars and 12 molars. A mature mare usually has 36 teeth; the 4 canines seldom are present. Both sexes may have "wolf teeth" which are the first premolar.

The young horse, either male or female, has 24 deciduous (temporary) or milk teeth including 12 incisors and 12 pre-molars (no molars). Milk teeth are smaller and whiter than permanent teeth.

Figure 4. Learn the four types of teeth

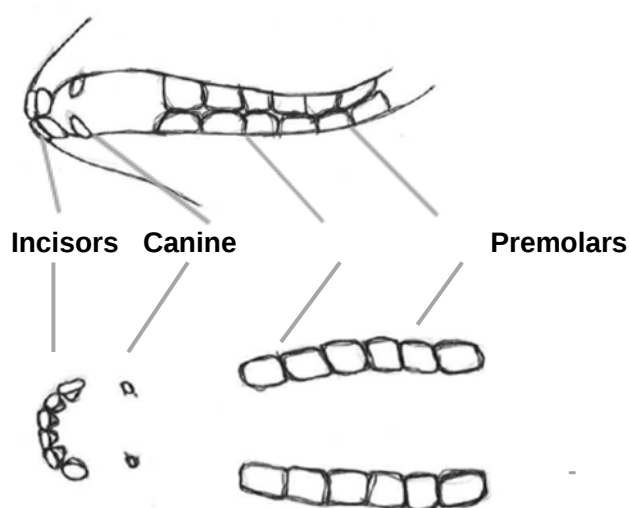
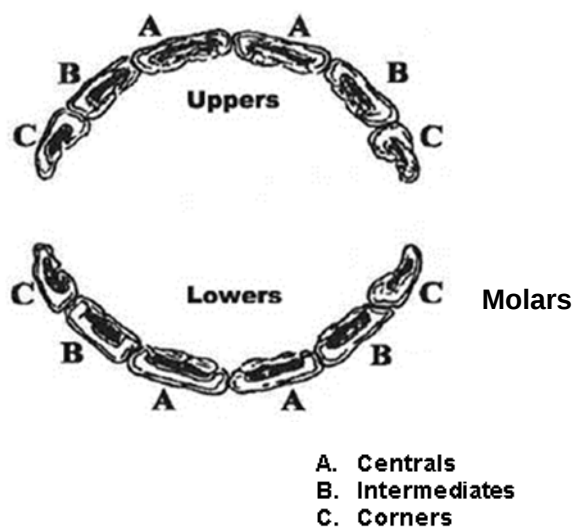


Figure 5. Learn the names of the incisors.



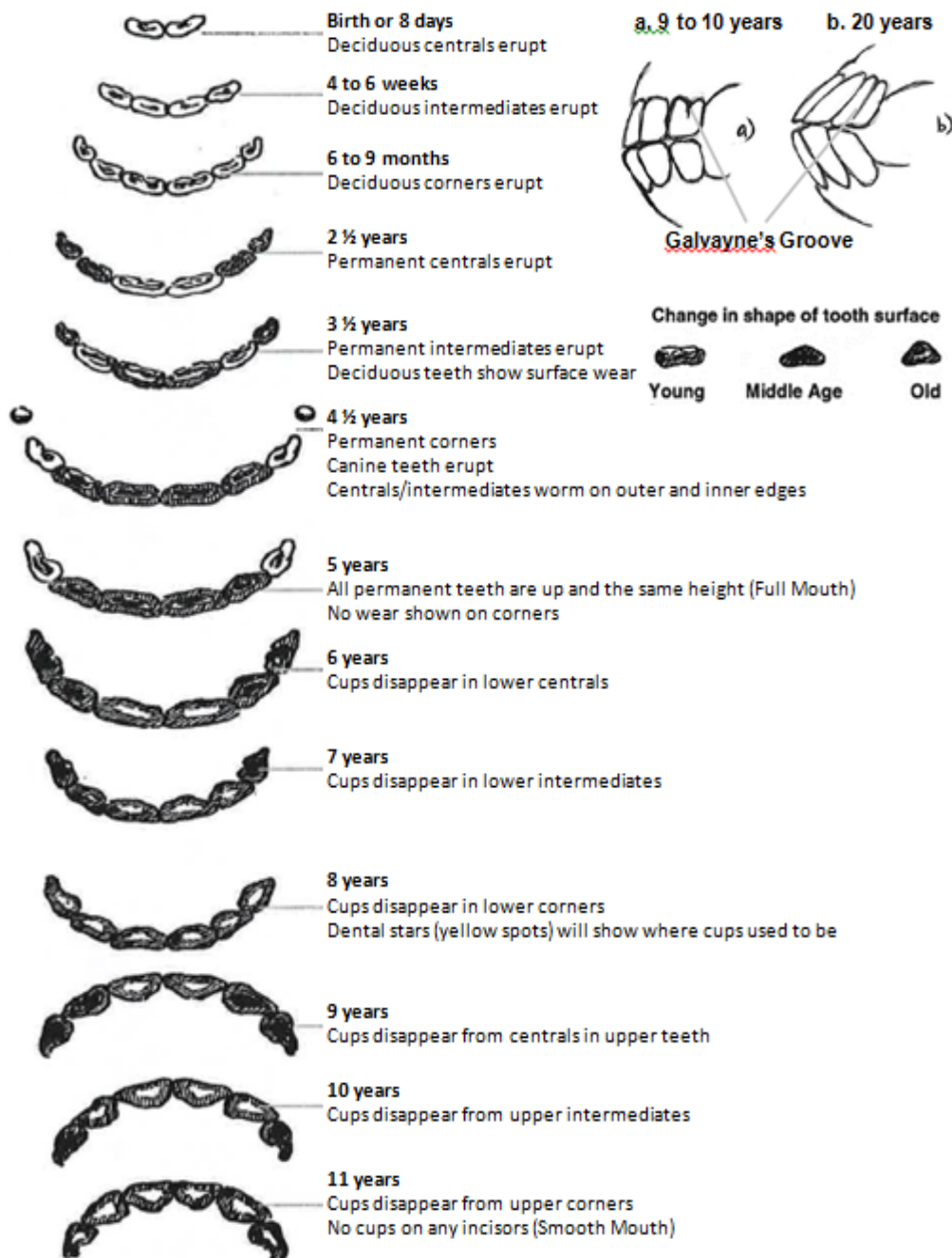
From birth to five years, the eruption (break through the gums) of incisors is used to judge age. At five years, permanent incisors are all in place. After five years, age is determined by the shape of biting surface (Figure 7); wear on the incisors and angle at which incisors meet. A horse grinds his teeth down little by little as he chews. At the same time, incisors and molars will continue to grow at a slow rate changing the shape, surface, and angle of the teeth over time.

Younger horses have oval shaped teeth with a shorter visible tooth. When viewed from the side, their incisors are more vertical. Older horse's teeth are triangular shaped and are known as "long in the tooth" due to a more visible tooth. The top and bottom incisors will also be more angled or protruded. For horses over 10 years of age, the Galvayne's Groove appears near the gum line of the upper corner incisors. At 20, it will reach the entire length of the tooth and then begin disappearing from the gum down the tooth until it is gone at 30.

When judging age, hold down the lower lip for a quick glance to see the shape of the grinding surface the angle at which the upper and lower incisors meet and the length of the teeth below the gum line. Ages can be categorized into the foal period (birth to 5 years), the full-mouth period (five to 12 years), and the smooth-mouth period (11-12 years and older).

Study the illustrations in figure 7 for the points to look for at each year of age and practice looking at teeth.

Figure 6. Determine a horse's age by looking at its front teeth.



BUYING THE RIGHT HORSE

You are not required to purchase a purebred or registered horse for a 4-H project. Select a healthy, sound (physically fit, and well-mannered horse. As you learn more about horses, you may begin to prefer one breed over another. Remember every breed has good points; but no matter the breed, your horse will only be as good as your ability to handle it. Owning a horse is an expensive commitment, requires time, and is a big responsibility. Before buying a horse, keep in mind:

- the rider's age, size, interest(s) and riding style,
- the family's knowledge of horses,
- available facilities, and
- what you can afford.

Safety and suitability of horse to rider are the most important factors when selecting a horse. The horse should be appropriate for the 4-H member's size, age and level of horse handling and riding skills and as safe as possible for its intended use. The idea that a new, young, rider can get a young, inexperienced horse so they can grow together is a fallacy which can lead to major frustration and injury! Avoid this combination!

The following steps will be helpful when buying a horse:

- Consult a knowledgeable, qualified, reputable horse person to help select your horse.
- Consider if you plan to purchase or lease
- Think about the purpose or intended use of the horse to help you decide what type or breed of horse is most appropriate for your needs.
- Consider your horse handling experience and abilities and carefully compare these with the experience, ability and disposition of the horse.
- Consult a qualified veterinarian to help assess the athletic ability, soundness and conformation or structure of the horse with a *pre-purchase exam* (more on pg. 16).
- Consider price and budget and compare this to the current market prices for similar type of horses. Also consider your ability to provide long term care for the animal as purchase price is only a fraction of the cost of horse ownership over time.
- Request a sales or lease agreement that will define the conditions of the sale or lease.
- Avoid purchasing a horse for a 4-H member at an auction

Horse breeds can be classified by the purpose (work cattle, pleasure riding, showing, rodeo, jumping, driving, etc.) for which they are best suited. Some breeds may have horses with more than one classification. When selecting a 4-H mount, determine what classification best fits you and your family's interest. Stock horses were developed for use on ranches, but they can also be used for pleasure riding and show ring competitions. Hunter horses are often used for jumping and cross-country riding. The type and conformation of major horse breeds are described in the *CSU Horse Judging Team's Manual*.

Once you decide on a classification, select a horse that fits you. A beginner should choose a mature, well-trained horse. Do not select a young, unbroken horse. The combination of a beginner rider and a green horse generally is not beneficial to either the rider or the horse. Ask a veterinarian, riding instructor, trainer or local 4-H leader to inspect a horse before you purchase it. A veterinarian can perform a pre-purchase exam to determine if the horse is healthy or has structural problems that will affect its athletic ability. An instructor, trainer or 4-H leader can evaluate the horse's temperament, training, and suitability for the 4-H member.

Pre-Purchase Exam

The following guidelines are from the American Association of Equine Practitioners (AAEP):

Owning a horse can be a big investment in time, money and emotion. Unfortunately, horses seldom come with a money-back guarantee. That's why it is so important to investigate the horse's overall health and condition through a pre-purchase exam conducted by a veterinarian. Whether you want a horse as a family pet, a pleasure mount, a breeding animal, or a high-performance athlete, you stand the best chance of getting one that meets your needs by investing in a pre-purchase exam.

Pre-purchase examinations may vary, depending on the intended use of the horse and the veterinarian who is doing the examination. Deciding exactly what should be included in the pre-purchase examination requires good communication between you and your veterinarian. Choose a veterinarian who is familiar with the breed, sport, or use for which the horse is being purchased.

- Explain to your veterinarian your expectations and primary uses for the horse, including short- and long-term goals (e.g., showing, then breeding).
- Ask your veterinarian to outline the procedures that he or she feels should be included in the exam and why.
- Establish the costs for these procedures.
- Be present during the purchase exam. The seller or agent should also be present.
- Discuss with your veterinarian his or her findings in private.
- Don't be afraid to ask questions or request further information about your veterinarian's findings in private.

The veterinarian's job is not to pass or fail an animal. Rather, it is to provide you with information regarding any existing medical problems and to discuss those problems with you so that you can make an informed purchase decision. Your veterinarian can advise you about the horse's current physical condition, but he or she cannot predict the future. The decision to buy is yours alone to make. But your veterinarian can be a valuable partner in the process of providing you with objective, health-related information.

BASIC HANDLING & SAFETY

Responsibilities

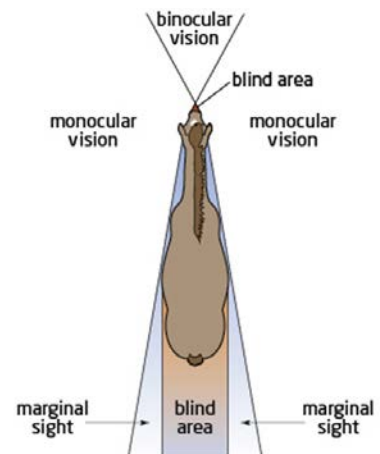
Safety is everyone's responsibility! All people involved should recognize that they must act responsibly always when riding and working around horses. NO horse or pony is a completely predictable animal! Horses, mules and ponies are 5-15 times larger, 20-40 times more powerful and 3 to 4 times faster than a human.

Everyone (parents, leaders, 4-H members) involved in the horse project should realize that there are many risks associated with equine activities. Preventative measures should be taken to reduce these risk factors. Safety education, selection of a horse that matches the capabilities of the rider, use of protective equipment, adequate instruction, and appropriate supervision based on the skill level of the rider are vital to the prevention of injuries.

It is important to understand there are risks associated with equine use and injuries may be severe. However, several studies show that horseback riding is safer than many everyday activities, when protective measures are used. Steps can be taken to minimize risks and help make equine activities safe and enjoyable for all participants. Utilize the following information to reduce the risk and provide a safer interaction with your horse.

Approaching a Horse

Horses have the largest eyes of any land mammal, and are lateral-eyed, meaning their eyes are positioned on the sides of their heads. This means horses have a range of vision of about 350°, with approximately 65° of this being binocular vision and the remaining 285° monocular vision. This provides a horse with the best chance to spot predators. The horse's wide range of monocular vision has two "blind spots," or areas where the animal cannot see: in front of the face (making a cone that comes to a point at about 3 - 4 ft. in front of the horse) and right behind its head, which extends over the back and behind the tail when standing with the head facing straight forward.



- Always approach at an angle, never directly from the front or rear. Speak to the horse; let him know you are there.
- Pet a horse by first rubbing a hand on its shoulder or neck not its face. Don't "dab" at the end of a horse's nose.
- Always walk around a horse out of kicking range, or walk close to the horse, with appropriate contact on the hindquarters. Never walk under or step over the rope.

Handling

Understanding horse behavior and proper horsemanship is essential to safe use of horses. By understanding horse behavior, you will be better able to predict and control your horse's actions. Recognize that considerable time is required to develop horse handling and riding skills. When handling your horse, know your horse, its temperament and reactions. Control your temper always but be firm. You must have the horse's attention and respect to be safely in control.

Do not tease your horse or encourage dangerous behavior which may become lifelong habits. For example, do not tolerate nipping or kicking by foals or encourage biting by feeding the horse from your hand. Don't allow the horse to rub its head against you by scratching it, thereby encouraging this behavior. These actions may be harmless at first, but they may later result in dangerous, unwanted behavior.

Horses learn by repetition, and therefore it is critical that the handler be consistent in presenting cues or commands. When a cue is presented, a response is given by the horse. If the response is the one desired, immediately reward the horse appropriately. If it is necessary to correct the horse, do so only at the instant of the negative behavior by the horse. If you wait, even for a second or two, the horse may not understand why you reacted the way you did. If discipline is necessary, do so firmly, but without anger, or your response may be too severe.

The following points should be helpful when handling horses:

- Be calm and confident around horses. A nervous handler causes a nervous, unsafe horse.
- While you work, stay close to the horse so that if it kicks you will not receive the full impact. Try to stay out of kicking range whenever possible. When you go to the opposite side of a horse, walk behind, out of kicking range, or close behind the horse with appropriate contact on the hindquarters.
- Know your horse, its temperament and reactions. Let it know you are its firm and kind partner. Control your temper always.
- Always let a horse know what you intend to do. When you pick up a foot, for example, do not grab the foot hurriedly. This will startle the horse and may cause it to kick. Learn the proper way to lift feet.
- When you work around a horse, the safest method is to tie or hold the head by holding the lead rope.
- Work around a horse from a position as near to the shoulder as possible where a horse is least able to kick you or hit you with its head.
- Never stand directly behind a horse to work with its tail. Stand off to the side, near the point of the buttock, facing the rear. Grasp the tail and draw it around to you.
- A good equestrian will keep in balance always. An accidental slip or stumble can result in unintentional injury by the horse.
- Avoid kneeling next to a horse when working with a horse's legs or feet. Always stay on your feet so you can quickly move out of the way of a horse that moves, spooks, or kicks.
- Do not drop grooming tools on the ground near the horse. Place them where they will not be stepped on by the horse or cause you to trip.
- Know the horse's peculiarities. If someone else rides your horse, tell them what to expect.



- Teasing a horse may cause it to develop dangerous habits for the rest of its life and put your safety, and the horse's safety, in serious jeopardy.
- Punish a horse only at the instant of its disobedience. If you wait, even for a few seconds, it will not understand why it is being punished. Punish without anger. Never strike a horse about its head.
- It is not safe to leave a halter on a horse that is turned loose. When necessary to do so, the horse should be checked daily because some halter materials shrink. Be certain to check the fit and make sure the horse can't catch a foot in the halter strap. A halter might catch on posts or other objects, causing injury.
- Wear footgear that will protect your feet in the case you are stepped on. Riding boots are best. Never go barefooted.



Leading

When leading, walk beside the horse, not ahead or behind. A position even with the horse's head or halfway between the horse's head and shoulder is considered safest. It is customary to lead from the horse's left, or near side, by using the right hand to hold the lead near the halter. Extend your right elbow slightly toward the horse. If the horse makes contact with you, its shoulder will hit your elbow first and move you away from it. Your elbow also can be used on the horse's neck to keep its head and neck straight and controlled, and to prevent the horse from crowding you. It is ideal to train the horse to be led from both sides. Do not let the horse lead you, insist on good ground manners.

- Make the horse walk beside you, not allowing it to run ahead or lag behind, when leading. The safest position is to stay even with the horse's head or halfway between the horse's head and its shoulder.
- When changing direction, it is safest to turn the horse away from you. Always push the horse away from you. Example: If leading on the left turn the horse to the right.
- Use a long lead strap and fold the excess strap in a figure-eight style in your left hand when leading.
- Your horse is larger and stronger than you. If it resists, do not get in front of it and try to pull.
- Never wrap the lead strap, halter shank or reins around your hand, wrist or body. A knot at the end of the lead shank aids in maintaining a secure grip when needed for control.
- When leading, tying, or untying a horse, be careful not to entangle your hands or fingers in the lead rope or reins. Use caution to prevent catching a finger in dangerous positions such as in halter and bridle hardware which includes snaps, bits, rings and loops.



- Be extremely cautious when leading a horse through narrow openings, such as a doorway. Be certain you have firm control and step through first. Step through and move to one side to avoid being crowded. Make certain that blankets or tack are not able to catch on the door or doorway.
- Any time you are dismounted or leading the horse, the stirrup irons on an English saddle should be run up, or “dressed” (slip the stirrups up the leathers). Also, be cautious of stirrups catching on objects when using a western saddle.
- Use careful judgment when turning a horse loose. It generally is safest to lead a horse completely through the gate or door and turn the horse about, facing the direction from which you just entered. Then remove the halter or bridle. Make the horse stand quietly while you pet it. Avoid letting a horse bolt away from you when released. Good habits prevent accidents.
- Avoid use of excessively long lead ropes that can become accidentally entangled. Watch the coils when using lariats or lunge lines.
- When leading your horse, while it is tacked up bring the reins, or romal, forward over the horse's head after dismounting.

Tying

- Know and use the proper knots for tying and restraining a horse. Consult a 4-H leader, riding instructor or trainer for the ideal tying knot for you and your horse.
- Tie your horse far enough away from strange horses so they cannot fight.
- Always untie the horse before removing its halter.
- Excessively long lead ropes can result in injury due to entanglement; length of lead rope depends on the size of the horse.
- Always tie with the halter rope and never tie with bridle reins.
- Consider if a space is safe before tying. Tie your horse a safe distance from tree limbs or brush, sharp or dangerous equipment as well as all types of food as it may cause the horse to become entangled. Avoid objects or places that may frighten the horse.
- Be certain to tie the horse to an object that is strong and secure and won't break or loosen if the horse pulls back. Tie to a vertical post or object not to a horizontal beam or pole.

Knots

Proper knots are important to your safety and appearance of your gear. Knot tying, and braiding is fun to learn, does not take long and makes your equipment look neater. Consult with a 4-H leader, riding instructor or trainer on the proper use of different knots and best knots for you and your horse.

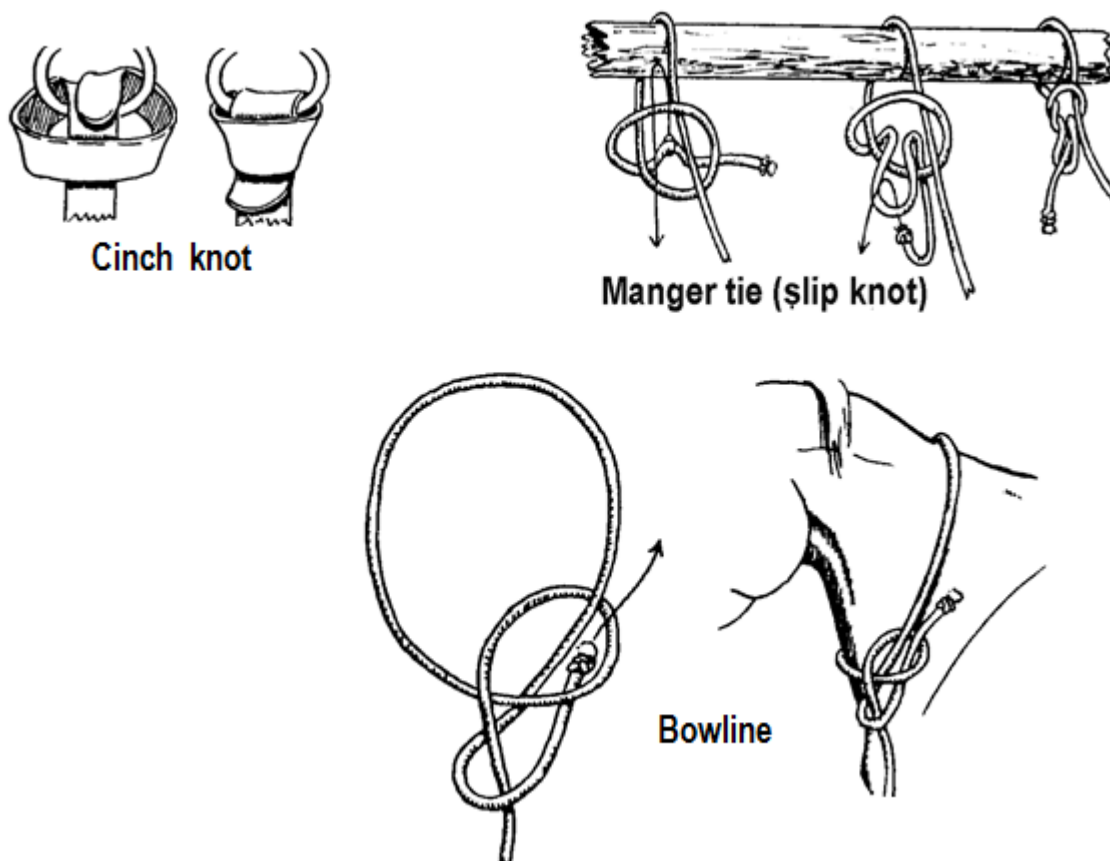


Figure 7. A variety of knots are used with horse equipment: the cinch knot on a western cinch; a manger tie to tie your horse; and the bowline as an emergency-made harness that won't slip.

Riding

Riding is often the ultimate goal when owning a horse. It is highly recommended that all 4-H members seek riding instruction from a knowledgeable and trusted horse project 4-H leader, trainer or riding instructor at the beginning and throughout your 4-H career. If you are new to horses, start by riding in a confined area. An arena may be too large. A round pen might be more suitable. Learn to feel your horse and understand how to get him to move, turn and stop before you leave the confined area. When you feel comfortable, move out to larger areas.

Wearing protective headgear (ideally ASTM/SEI approved helmets) when riding can prevent serious head injuries. This holds true for any form of riding. In Colorado 4-H programs, helmets are required for English and Gymkhana events in all counties while some counties may require helmets for certain riding levels, ranch horse events or for all riders in all events.

Here are some safety tips for riding:

- It's important to keep the horse's feet properly trimmed or shod and have the horse's teeth checked for any dental problems before you begin riding.
- When your horse is full of energy, do ground work exercises, lunge it or ride in an enclosed area until it is settled and calm.
- Keep your horse under control and maintain a secure seat always. Horses are easily frightened by unusual objects and noises.
- If your horse becomes frightened, remain calm, speak to it quietly, steady it and give it time to overcome its fear. Then ride or lead the horse past the obstacle.
- Hold your horse to a walk when you go up or down a hill.
- Allow the horse to pick its way at a walk when riding on rough ground or in sand, mud, ice or snow where there is danger of the horse slipping or falling.
- Do not fool around. It is dangerous for you and others who may be nearby.
- When riding on roads:
 - never ride bareback;
 - always bridle the horse (riding with just a halter does not give you control);
 - use good judgment when riding in pairs or in groups, allowing sufficient space between horses;
 - avoid paved or other hard-surfaced roads and walk the horse when crossing such roads;
 - in areas of heavy traffic, it is safest to dismount and lead the horse across.
 - ride on the shoulders or in barrow pits but watch for debris that can injure a horse.

- Never rush past riders who proceed at a slower gait. It startles both horses and riders and can cause accidents. Approach slowly, indicate a desire to pass and which side you are passing on and proceed cautiously.
- Never ride off until all riders are mounted. Horses are herd animals and may become agitated and hard to handle if other horses are leaving.
- Ride abreast or stay a full horse's length from the horse in front to avoid the possibility of being kicked.
- Walk your horse when you approach and pass through underpasses or ride over bridges.
- Do not let a horse run to and from the stables. Walk the last mile home.
- Know the proper use and purpose of spurs before wearing them.
- Dogs and horses are both good companions, but they may not mix. Keep your dog under control at all times around horses.

Riding at Night

- Riding at night can be a pleasure, but it can be more hazardous than daytime riding. Ride the horse at a walk or slower gaits; fast gaits are dangerous especially at night when visibility is low.
- If it becomes necessary to ride at night on roads or highways, follow the same rules as for pedestrians. State laws vary regarding which side of the road you should ride. Wear light-colored/reflective clothing and carry a flashlight and reflectors. Check your state regulations for details.
- Select a location with care. Choose controlled bridle paths or familiar, safe, open areas.
- Do not ride alone at night!



Equipment and Clothing

- Wear neat, well-fitting clothing that can't get snagged on equipment. Belts, jackets and front chap straps can get hooked over the saddle horn.
- Wear boots or shoes with heels as a safeguard against your foot slipping through the stirrup.
- Check all tack before each use. Keep bridle reins, stirrup leathers, headstalls, curb straps and cinch straps in the best possible condition. Your safety depends on these straps. Replace any of the straps when they begin to show signs of wear, such as cracking. Make sure there are no loose screws or sharp items projecting from the tack.

- Be sure all tack fits the horse. Poor fitting tack can result in sores on the horse and/or poor behavior (biting, balking, bucking, etc.) due to the pain. Work with a 4-H leader, instructor, trainer, or trusted tack shop to check tack fit, especially when buying new equipment. Tack can be a major financial investment that you'll want to get right the first time.
- Wear a helmet.
 - Wear a safety approved (ASTM/SEI) helmet with the harness securely fastened. There are many helmet designs available, both western and English.
 - Proper fit of a helmet is important for full protection. Helmets should fit snug but be comfortable! A helmet front should sit just above the eyebrows and the helmet should not move when rider shakes his/her head. Seek advice from a 4-H leader, instructor or trainer on helmet type, size, and adjustments.
 - More than 17 percent of all horse-related injuries are head injuries. Head injuries are associated with more than 60 percent of all equestrian-related deaths.
 - Riding helmets are not child's play. Adults, aged 25 and older, account for 53 percent of hospital-treated rider injuries. Injuries occur most frequently around or near the home or ranch (60 percent). Wear a helmet and make sure it is fastened securely on your head.
- Do not wear rings or dangling jewelry around horses. They can catch on the halters and other equipment.
- Gloves are a safeguard against cuts, scratches, splinters and rope burns.
- Learn to handle a rope before carrying one on a horse. Always use caution when working with a rope if the horse is not rope-broke. Never tie the rope hard and fast to a saddle horn while roping off a green horse.
- Spurs can trip you when you work on the ground. Take them off when you are not mounted.

Trailer or Other Hauling

- Always have at least one person help you when trailering.
- Always stand to one side, never directly behind, when loading or unloading a horse from a trailer or truck.
- Circumstances involved in loading a horse will vary, but the following methods are given in order of preference

- Train the horse so it can be sent or led into the trailer.
- Lead the horse into the left side of the center divider, or vice versa.
- With a straight-loading trailer, it is least desirable to get in front and lead the horse in (never do this without an escape door or front exit). Even with a door, use caution; most are awkward to get through. Also, horses have been known to follow the handler out.



- Be certain the ground area behind and around the truck or trailer affords safe footing before loading or unloading.
- It is safest to remove all equipment (bridles, saddles and so forth) before loading. Tack may get caught or cause a horse to feel claustrophobic in the trailer. Use your halter when loading your horse.
- Always speak to a horse in a truck or trailer before you attempt to handle it or unload.
- Be sure to **untie** a horse before opening the gate or door.
- Secure the butt bar or chain before you tie the horse. Use care when you reach for it. Ease it down when you unfasten it to avoid bumping the horse's legs.
- If you have trouble loading or unloading, get experienced help.
- Check your trailer regularly for the following:
 - Rotting or weakened floor boards,
 - Rusted and weakened door hinges,
 - Tires for pressure and weather rot
 - Broken hitch welds, and
 - When serviced, have a competent mechanic check the spring shackles and wheel bearings.
- Be certain the trailer is adequately constructed and meets state requirements for brakes and lights.
- The trailer height should give the horse ample neck and head room. Remove or cover any protruding objects.

- When you (or an adult) drive, always observe the following:
 - Double-check all connections (lights, brakes, hitch and safety chains).
 - Close and secure all doors.
 - Drive carefully. Make slow wide turns; make slow and steady stops.
 - Drive defensively and look ahead to avoid emergencies.
- Distribute the weight of the load evenly. When hauling one horse, load it on the left side of the trailer.
- Never throw lighted cigarettes or matches from a car or truck window because of the danger of fire or of the wind sucking them into the trailer.
- Check the horse and the trailer hitch at every stop before you continue.
- Opinions vary on whether to haul a horse tied or loose. If you tie it, allow sufficient length of rope so the horse can move its head for balance. Use a safety release or a quick-release knot.
- Horses are like people; some get motion sickness. Adjust the horse's feeding schedule to avoid travel when the horse is full of feed and water. Feed smaller amounts or avoid feeding grain before the trip.

Trail Riding

- If you plan to ride alone, tell someone where you are going and when you expect to return and carry a cell phone.
- Ride a well-mannered horse.
- Do not play practical jokes and indulge in horseplay.
- Watch where you ride-avoid dangerous ground. Note landmarks. Study the country and view behind you so you will know how it looks when you ride out.
- Courtesy is the best safety on the trail. Leave no trace and show consideration for other trail users.
- Think of your horse first. Watch your horse's condition, avoid injuries and care for it properly. If an injury should occur, dismount and seek help.
- Carry a good pocket knife to cut ropes in case of entanglement.
- Ride balanced and erect to avoid tiring the horse or causing a sore back and legs.



- Check the equipment:
 - Have a halter and rope. Hobbles are fine if the horse is trained to them.
 - Have clean saddle blankets or pads.
 - Be certain the equipment is in good repair and fits the horse.
 - Include bad weather clothing.
 - A pair of wire cutters is handy in case the horse becomes entangled in wire.
 - A lariat is handy for many needs if you know how to use one and are certain the horse is accustomed to a rope.
 - Other helpful equipment includes pieces of leather or rawhide for repairs, spare horseshoe nails and matches.
- When you unsaddle, store your gear properly. Place the saddle blanket where it will stay dry. Keep your gear covered overnight.
- Do not water your horse when it is hot. Cool the horse first. Provide water to your horse a few sips at a time.
- Always tie a horse in a safe place. Use the halter rope-not the bridle reins. Tie at or above below the level of the horse's withers. Be certain to tie it to an object that is strong and secure and will not break or come loose if the horse pulls back.
- Be extremely cautious of cigarettes, matches and fires. Know they are out before discarding them or leaving them unattended.
- Obtain current, accurate maps and information on the area. Become familiar with the terrain and climate.
- If you ride on federal or state land, get advice from the forest or park officials. Know their trail use and fire regulations.
- Be certain the horse is in proper physical condition and its hooves and shoes are ready for the trail.
- Use extreme caution at wet spots or boggy places.
- Riding at a fast speed on the trail is unsafe. Ride at safe gaits.
- Avoid overhanging tree limbs. Warn the rider behind you when you encounter an overhanging limb. Watch the rider ahead so a limb pushed aside doesn't snap back and slap the horse or you in the face.

Remember the Horse Safety Commandments

- Buy or ride a safe horse.
- Don't be over mounted.
- Know your horse.
- Don't surprise your horse.
- Check your tack.
- Watch small children
- Tie your horse with care.
- Know trailer safety.
- Don't crowd others.
- No clowning, please.

GROOMING

Grooming and Care

Regular grooming of your horse will:

- give it a clean, shiny coat and skin;
- stimulate muscle tone;
- gentle most horses; and
- provides an opportunity to examine the horse closely.

Basic grooming tools include a rubber curry comb or rubber groom-mitt, a coarse-bristle dandy brush, a fine-bristle body brush, a wool cloth or cotton towel rub rag, a hoof pick, electric clippers, a coarse toothed mane and tail comb, and a shedding or scrape stick. Metal spring, or bar-type curry combs, is not recommended for show horses because they pull and break the hair. The shedding blade, bent double with the two ends fastened, is a handy tool to use during the spring when the horse sheds its winter hair. It can be turned over and used as a sweat scraper in the summer. Use a sponge (soft brush) to clean muddy legs and other dirty areas. Keep your tools clean. Remembering how you use the tools, not their quality, determines the results.

Groom your horse before and after you ride.

If you follow a definite system, you will thoroughly clean the horse each time, and it will require less work. Comb in the direction of hair growth. Begin brushing the horse with a rubber curry comb or rubber groom-mitt at the head and work back on the near side including the legs; then go to the off side and work back from head to tail. Don't neglect the head (be gentle here) and the area around the tail. Do not use a metal curry comb around the head or below the knees and hocks. There is no fat or muscle in these areas to cushion the comb's hard edges. Use a wet sponge or soft brush to remove dirt from the horse's head, knees or hocks. Use a rubber curry comb to carefully remove caked dirt from below the knees and hocks.

When brushing, start with the coarse-bristle dandy brush and brush in short, brisk strokes. Flick the bristle up at the end of each stroke so it throws dirt away from the hair. Brush with the lay of the hair. It changes direction at different points on the body, so watch for these changes. Use the dandy brush on the body and legs, but not the head.



Figure 8. Regular grooming and care ensures a healthy horse.

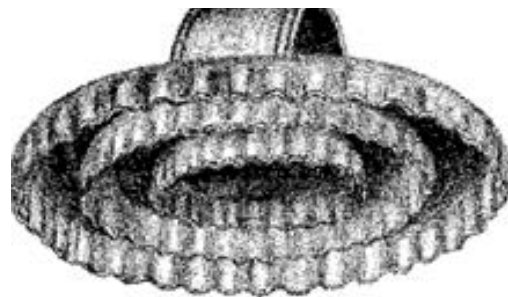


Figure 9. Rubber Curry Comb

Use the fine-bristle body brush on the head, body and legs. Again, brush in the direction the hair grows. Rub the horse from head to tail with a wool cloth or cotton towel rub rag to remove dust. Use a clean rag or towel to clean around the eyes, the nostrils and insides of the ears, this will help you to check for any discharges or sores in those areas.

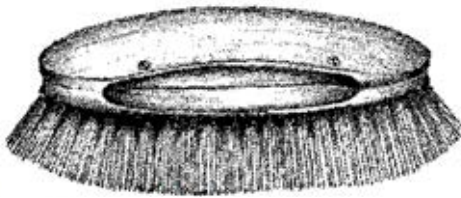


Figure 10. Dandy Brush

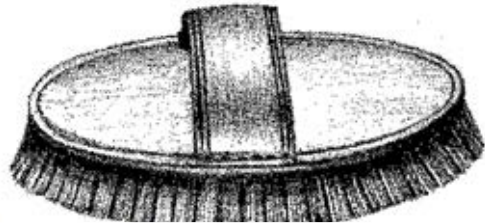


Figure 11. Body Brush

Many old-time grooms use their hands and fingers to rub and massage hair and muscles. When training a young foal, use your hands to rub, scratch and massage every part of its body.

Trimming and Clipping

Clippers and shears are additional tools used for grooming. Use clippers for cutting bridle paths and leg hair; to trim around the head, ears and lower jaw, and to remove whiskers from the muzzle. Use shears in place of clippers for horses that are clipper-shy. Clipping a horse can be dangerous; always have experienced people around to help.

Mane and tail styles vary with breed preferences. Contact your breed association for grooming styles.

Regardless of style, keep the foretop, mane and tail neat. Work out tangles in the mane and tail with your fingers and brush with a dandy brush or use a human hair brush. Use caution when using a comb. Over a period of time, a coarse-toothed comb or currycomb will pull out hair and leave it thin. Never try to pull tangles out; they just become tighter. Pick at them to loosen snarls. It works best to begin to untangle and comb from the bottom of the tail or mane. Watch for burrs and sticks caught in the mane and tail; remove them carefully. When grooming the tail, stand at the horse's side and never directly behind the rear of the horse.

Hoof Care

Proper cleaning of hooves requires you to pick up each hoof. Teach every horse to allow its feet to be picked up and handled. Begin when it is young, so it gets accustomed to the feel of your hands. If you trim the foal's feet as it grows, you should have no trouble when the horse becomes full grown. Figures 29-32 shows how to properly pick up your horse's feet.

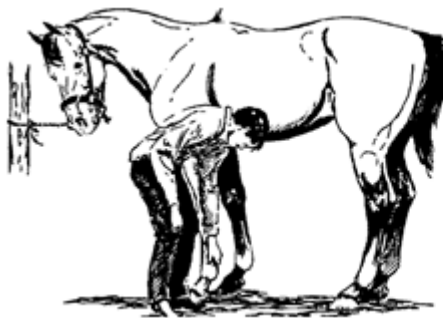


Figure 12. Near forefoot: Slide your left hand down the cannon to the fetlock. Lean with your left shoulder against the horse's shoulder. Reverse for picking up the off forefoot. When the horse shifts weight and relaxes on the foot, pick it up.

Clean the hoof from heel to toe. Pay particular attention to the area around the frog. Clean the depressions thoroughly between the frog and the bars to prevent thrush and other foot infections. Support the hoof and place it back down on the ground, do not just drop it. Watch for rocks, nails, injuries and loose shoes. Check the growth of the hoof periodically; trim and change shoes when necessary.



Figure 13. For a quick cleaning, hold the hoof in your free hand. When shoeing or for a long cleaning job, it will help to place the horse's foreleg between your legs. Hold your knees together to help support the weight of the horse's leg. Be prepared to release the leg, in case the horse is not comfortable with it being trapped between your knees.

Proper hoof trimming is very important because it keeps your horse standing squarely and moving straight. Trim hooves every six to eight weeks, depending on the rate of growth. The hooves of young horses should be watched closely as they grow. Keep feet trimmed regularly so that the muscles and bones of the feet and legs will develop correctly. A healthy hoof grows about 3/8- to 1/2-inch a month and the fastest growth is at the toe of the hoof. Do not let hooves grow long during winter months or when you are not using your horse. Keep hooves trimmed. If your horse is idle during winter months, it should be left unshod, so its hooves have a chance to expand without being limited by shoes. This will prevent contracted heels.



Figure 14. Near hind foot: Stand forward on the hindquarter and stroke with your right hand from the point of the hip down the hip and leg to the middle of the cannon. As you move the right hand down, place the left hand on the hip and press to force the horse's weight to the opposite leg. Grasp the hock and lift the leg forward slightly; slide your hand down to the fetlock and lift the foot forward.

Corrective trimming and shoeing on some horses improves or corrects inherited faults in conformation. The work should be done only by a person fully experienced in the structure of the foot and leg who has the knowledge of corrective measures. Ask your farrier for the shoe size your horse wears on the front and back, and if he did corrective work on your horse. If so, ask what correction was needed and exactly what was done. Learn the basic points of proper shoeing so you will know when your horse is shod correctly. A poor job of shoeing can cripple your horse for long periods of time. Know what is correct and insist the job be done right.



Figure 15. When the horse is settled, move to the rear, keeping the leg straight and swing your left leg underneath the fetlock to help support the horse's leg. Never pull the foot to the side—your horse will resist. Reverse sides for picking up the off leg. Support the hoof and place it back down on the ground, do not just drop it.

The hooves of a horse will dry out rapidly in a dry climate and soils of the west. Keep your horse's hooves moist. A dry hoof will become brittle and crack; the frog will lose its elasticity. If a hoof is left dry too long, the frog will shrink, and the heel will contract. Hoof dressing may be applied. One of the best preventions is to have some moist ground, possibly around the watering facilities, where the horse will stand long enough for moisture to go into the hooves.

However, do not keep the hooves too moist because thrush infections grow in wet, manure packed feet. If your horse gets thrush, apply a commercial germicidal preparation or a 7 percent iodine solution to the frog area of the hoof.

Fitting and Training for Show

When showing horses, either in halter or under saddle, the competition can be tough. If you intend to compete, you must plan on spending many months training and fitting your horse.

Proper fitting is time-consuming and requires a good worming program, proper feeding, a balanced exercise schedule, grooming and training. You cannot fit a horse properly in a day, a week or a month. Start early.

Exercise

Exercise is necessary to build muscles and develop wind. Circumstances will dictate how you exercise the horse, but it should receive some planned exercise daily. Combine training and exercise but keep them in balance. Train for short periods. Plan to get the horse out on long, relaxed rides where it can walk and trot. Walking builds muscles; trotting builds muscles and develops wind; loping develops wind. Lunge the horse for 20 to 30 minutes on days when the horse is not in training, to keep muscle tone.

Bathing for Show

When you bathe your horse, use a mild soap and rinse thoroughly. Use only water on the horse's face; avoid using soap. After rinsing the horse's body, scrape the remaining water off with a sweat scraper. Then, rub the horse dry with a clean towel. Keep the horse out of drafts until it is dry. The horse's coat may be fluffy and not lay flat after washing. If bathing can be done at least one day prior to a show and the horse kept clean until show time, the hair will lay flatter and smoother.

Cleanliness is very important, especially in showmanship classes. Clean the horse around eyes, nostrils, muzzle, under the tail and between its legs. The gelding's sheath and the mare's udder also require cleaning.

A blanket or sheet placed on the horse overnight will help keep the coat clean but blanketing your horse should depend on circumstances. If you plan to show early or late in the season, blanket the horse full time when a short-hair coat is desired during the winter months. To keep hair off your horse in the winter months a light (at least 100 watts) can be on a timer to simulate summer light patterns. (16 hours of light) This also works to bring mares into heat earlier in the season.

Banding the Mane

Banding the mane takes practice to get the mane to lay flat. Start with a clean damp mane, section off a ½ inch section. Keeping the hair pulled down, apply a rubber band, pulling the hair underneath to tighten the rubber band and lay the hair down. Continue down the mane leaving the last inch free. This is done for stock-type horses (Quarter Horse, Paint, Appaloosa, etc.)

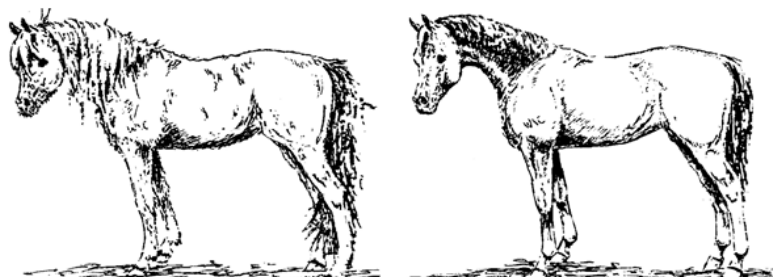


Figure 16. Compare the appearance of the two horses—the differences between an un-groomed and a well-groomed horse

HOUSING AND FENCING

Housing

Shelter for 4-H horses should furnish protection from sun, wind or stormy weather. The type of shelter depends on the facilities available to each member. This varies from a three-sided loafing shed in the pasture, to a barn with box stalls and a tack room.

The stable need not be fancy but should be well constructed for safety and arranged well so it can be kept clean. Listed in the chart are some standard dimensions and space requirements for various horse types. Your stable or shelter may not fit the listed dimensions exactly. Check to be certain there is plenty of room, light and ventilation.

The horse should have access to clean water always, either automatic or buckets. Hang water buckets high enough your horse cannot get its hoof in the bucket. There are many options on how to set up feeders for a horse. Many horse owners use hanging hay and grain feeders. These keep feed and hay up off the ground and are high enough a horse will not get their feet in it. Other feeders are called ground feeders. These feeders prevent grain or hay from touching the ground but are much lower than hanging feeders. Ground feeders should be made of safe materials and constructed in a way to prevent a horse from getting a foot caught in them. Be sure to pick a clean area on the ground to feed hay or grain because the horse may pick up dirt, sand or parasites eggs with the feed. Sand and dirt may cause colic, and the parasite eggs could lead to a parasite infestation.

	Pony	Light Horse	Draft
Box Stall (width x length)	10'x10'	12'x12'	14'x14'
Box Stall (height)	7'	7'	8'+
Doors (width x height)	4'x7'	4'x7'	4'x8'+
Barn Ceiling (height)	8'	10'	10'+

If you board your horse, there are several options: stabled (box stall), corral, and pasture board. When selecting a boarding stable, ask what they provide to boarded horses. If you pay full board, the boarding stable should provide feed, clean manure from pens/stalls and provide turn-out space for the horse to graze and run. Partial board agreements (where duties for horse are shared between boarding facility and owner) vary, so check out what is included with your boarding arrangements.

For horses kept in a corral or pasture with a loafing shed, it is important the shed and corral have enough room for the number of horses running together. Horses are herd animals and they establish social orders. Dominant horses will bite and kick those horses lower in the social order. Be certain the loafing shed has enough room, so all the horses can use the shelter and avoid being trapped by the dominant horse; this will prevent possible injuries.

Regardless of where you keep your horse, always be alert for loose boards, nails and any projections that could cause injuries. Keep all wire and twine picked up so horses don't get caught in it, resulting in injury, or ingest it causing health problems.

Fencing

When choosing what type of fence to construct, different fencing materials have advantages and disadvantages. Safety should be the top priority when choosing a fence. Take into consideration the health of the horse, but also think about the cost of replacing damaged fence and paying veterinary bills for horses injured by a fence. It can become very expensive.

The safest fence is usually the most visible, but rarely the cheapest. Some types of safer fencing are polyvinyl, electric tape, small square wire mesh and well-maintained rail fence made of wood or steel. More dangerous fencing includes large square mesh (horses can get their feet caught), barbed wire, smooth/high tensile wire and electric wire. These fences are hard to see and if a horse gets tangled in one, the wire can cause serious injuries, especially to legs.

Another thing to keep in mind when choosing fence is the price. Make sure you budget appropriately. You will want to think about how easy it is to put up and maintain. Are you going to install it yourself or have a professional, do it? Will your fence break easily? How much time will be needed to maintain it?

Often people want a nice-looking fence because it will increase property value. Another consideration is the size of the area being fenced. Some types of fencing work better for smaller areas, such as panels, but would not be reasonable for fencing 20 or more acres.

Consider how many horses the fence will be expected to contain. The more horses, the sturdier fence must be. A horse is more likely to hit a fence when running away from or playing with others.

If using an electric fencing, be sure to check it often with a fence tester to be sure it is still operating properly. Most electric fence chargers have a light showing when the fence is not working, or the circuit is incomplete. If it is not working, look for things that may be shorting the circuit. Turn the charge off and remove overgrown weeds, grass, limbs or other items making contact with the fence lines.

Fence safety also relies on maintaining fences. Loose wires and boards can provide hazards or places for horses to escape. Make sure to check all fences regularly and tighten the fence wires as needed. Consider securing plastic or rubber caps to metal T-posts. Horses can get very serious injuries by running into metal T-posts.

Fencing may also be used to control rotational grazing. Rotational grazing limits the area and amount of time a horse can graze the area. Horses graze a small pasture or paddock for a short amount of time while other pastures or paddocks are being "rested" or allowed to regrow forage without horse grazing it. (see Pasture Management section)

Gates should also be considered along with fencing. A gate needs to be easily visible and at least four feet wide for a horse to pass through safely. Most gates are ten to twelve feet wide. This easily allows horses, ATVs, small tractors or most vehicles to go through. Gates must be hung securely using a hinge system attached to a gate post that will not allow the gate to sag. Gates should also be hung as plumb and level as possible to prevent the gate from swinging open or closed by gravity. Gate latches should be easily secured, but not so simple a smart horse can open the gate. Consider adding a clip to basic chain gates to keep a horse from undoing the chain.

Fences and gates are not only made to keep horses in, but also to keep people out. Horses kept in high traffic and busy areas may need to have locked gates to prevent someone from opening the gate. It may also be advisable to hang signs to inform the public not to enter your horse property without permission.

Disposal of/composting manure

Develop a plan for manure collection, disposal or use. The average 1,000 lb. horse defecates 4 to 13 times a day and produces 9 tons of manure each year. Pens and stalls should be cleaned regularly not just for cleanliness but to reduce fly populations and parasite spread.

Consider converting manure and yard waste into a useful product for gardening and landscaping. Using straight manure in a garden may contribute weed seeds and scorch plants. Composting is a controlled way of decomposing organic matter (hay, bedding, manure, etc.) so it occurs more quickly and uniformly. By properly composting manure and stall waste, weed seeds, fly larvae and parasite eggs are destroyed by the heat generated by the microorganisms. Composted manure also slow-releases needed nutrients back into the soil.

Visit <https://sam.extension.colostate.edu/topics/composting/> for information on composting horse manure.

If your situation or space doesn't allow for composting, check with local waste systems for disposal options and drop offs. Often cities or counties provide manure recycling locations.

REDUCING THE RISK OF BARN FIRES

Barn fires are devastating and, sadly, often preventable. They start small, build quickly and often engulf the structure in as little as 10 min. Because barn fires build so quickly, only professional fire fighters wearing appropriate protective gear should enter a burning barn.

It can be difficult to get horses out of their stall in a burning barn and they can even try to run into a burning barn to get to their stall because they consider their stall a safe place in the chaos.

Below is a fire prevention checklist authored by Laurie Loveman. Laurie was a professional firefighter who was part of the National Fire Protection Association (NFPA) Technical Committee on Fire Safety in Animal Housing Facilities.

This list can be used to evaluate the risk of a fire in your barn. The list is long, but the corrective actions are often quite simple. After reviewing the checklist, make the necessary changes to reduce the risk of fire in your barn. Visit the Fire Safety in Barns website at www.firesafetyinbarns.com for a lot of common sense as well as technical solutions.

FIRE PREVENTION CHECKLIST

Using this checklist, walk through your barn and see what needs to be corrected. You can find help in making corrections by visiting Fire Safety in Barns at www.firesafetyinbarns.com

Mark this form with Yes (Y) or No (No) next to each question to identify problem areas that need correction.

- _____ Are aisle ways and doorways clear of debris or “stored” objects?
- _____ Are cobwebs removed weekly, if not more often?
- _____ Are all electric motors on both fixed and portable appliances completely sealed?
- _____ Have all lightweight (lamp-type) extension cords been removed?
- _____ If extension cords are in use (temporarily only) are they industrial or heavy duty rated?
- _____ Are any electrical cords hanging from or supported by nails?
- _____ Is all permanent electrical wiring in conduit?
- _____ Are cages installed over all light bulbs?
- _____ Is there a master electric power switch on the outside of the barn?
- _____ Is there a frost-proof water hydrant at or near the entrance to the barn?
- _____ Is there a water hose long enough to reach the opposite end of the barn?
- _____ Is hay stored in a shed or in another building at least 100' from the barn?

- _____ Is hay dry and well-cured? Is hay in a waterproof area?
- _____ Is stall bedding stored in an area away from the animals?
- _____ Is used stall bedding (manure pile) kept in an area away from the barn?
- _____ Have cleaning cloths contaminated with any petroleum product been properly disposed of?
- _____ Is a sign with fire department information posted by the telephone?
- _____ Is an emergency animal escape plan displayed?
- _____ If you have a “runway” exit to a pasture have all animals been trained to use it?
- _____ Can fire apparatus reach the barn? (Check road surface, gate and curbs)
- _____ Have you invited your fire department to visit your property for purposes of making a pre-plan?

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FEEDING & NUTRITION

Anatomy and physiology of the digestive tract

Understanding the anatomy and function of the horse's gastrointestinal (GI) tract is critical to maintaining its health and preventing conditions such as colic and laminitis.

A horse's GI tract consists of the mouth, esophagus, stomach, small intestine, cecum, large and small colon, rectum, and anus (figure 9 and 10). The volume, length, capacity, and transit time (time it takes for food to pass through) of each compartment of the GI tract are shown in Table 1. Forty-five to 72 hours is required for food to completely pass through the digestive tract of the horse.

Table 1. Volume and length of the equine digestive track.

Compartment	Volume (gal)	Length (ft)	Transit time
Stomach	2 - 4	n/a	< 2 hrs
Small Intestine	10 - 12	50 - 70	45 mins to 8 hrs
Cecum	7 - 8	3 - 4	< 5 hrs
Large Colon	14 - 16	10 - 12	45-72 hrs
Small Colon	~ 5	10	

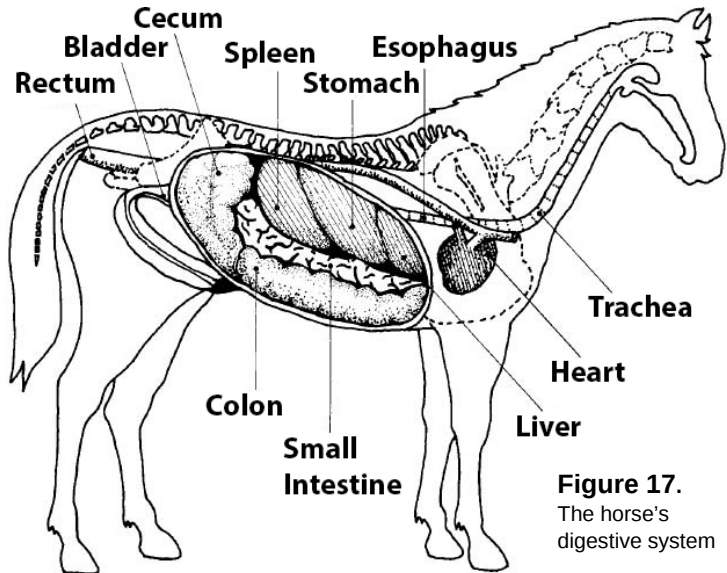


Figure 17. The horse's digestive system

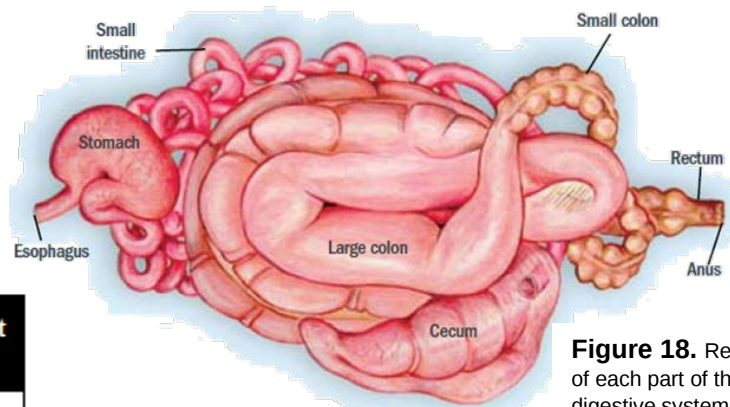


Figure 18. Relative capacities of each part of the horse's digestive system. Figure courtesy of www.extension.org.

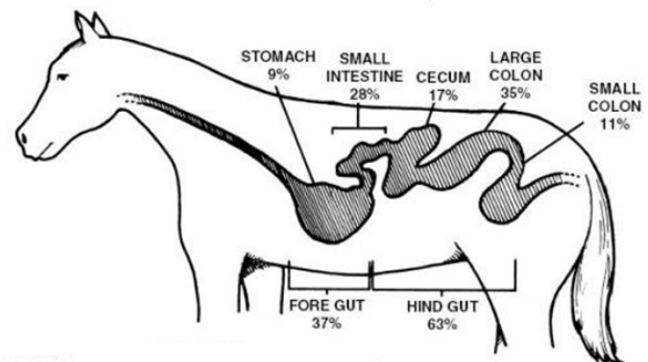


Figure 19. The horse's digestive system. Figure accessed from www.thehorse.com.

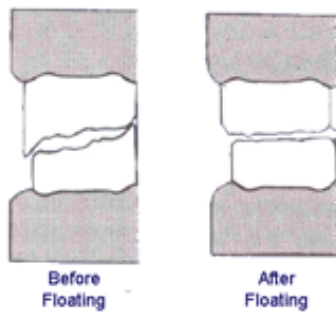


Figure 20. Teeth Floating

Figure courtesy of
www.extension.org

Each part of the digestive system serves a specific function in the digestion and absorption of nutrients. The mouth has several important functions including *prehension* (seizing and grabbing) of feed, chewing and swallowing. The lips of the mouth serve as prehension devices moving feed into the mouth and selecting feeds that are palatable or tasty. Incisors (front teeth) are used to cut feeds such as forages, whereas the molars (teeth in the rear of the mouth) are used to grind feed, reducing the particle size and aiding in the digestive process. The mechanical grinding of feed by the teeth is known as *mastication*. Horses chew in a circular motion that results in the eventual formation of sharp points on the molars that can cut the cheeks, a painful situation that may impair mastication. Sharp points on molars are prevented by having the teeth *floated*, which involves filing the

sharp points down (see Figure 20). All horses should receive a dental exam every 6 – 12 months to check for these sharp points and other irregular wear. Your veterinarian may provide this service.

Swallowing is another function of the mouth. Ingested feed is ground and incorporated into a bolus (ball), lubricated with saliva and then swallowed into the esophagus. The esophagus can be thought of as a pipeline from the mouth to the stomach. No digestion occurs in the esophagus. Food in the esophagus can only move in one direction, toward the stomach. Essentially, horses are not capable of vomiting. If food becomes lodged in the esophagus, the horse may choke. Choking is painful and uncomfortable to the horse. The result of a choke can be life-threatening if other problems develop like aspiration, a rupture of the esophagus, or pneumonia. A choking horse's head often is hung low with saliva and masticated food coming out of the horse's nostrils. A choking horse requires immediate veterinary attention and is usually treated with minimal complications.

The mouth, esophagus, stomach and the small intestine make up the *foregut* of the horse; the cecum, large and small colon, and rectum make up the *hindgut* of the horse. The majority of starch (the main part of cereal grains that provide energy), protein, fat, vitamins and minerals are broken down and absorbed in the small intestine by enzymes and other digestive substances secreted into the small intestine by the pancreas and mucosal lining (the cells making up the wall of the small intestine). The hindgut contains microbes, which are bacteria and protozoa capable of digesting dietary fiber supplied by roughages (i.e. hay, pasture grass) in the diet. The horse does not produce the enzymes needed to digest fiber quite well and needs microbes to break it down. Microbes enable horses to utilize fiber quite well by making fermented by-products that the horse can absorb. Horses require a fiber-based diet for the gut to function normally. In summary, the horse's GI tract is a delicate system. Feeds should be selected not only for their ability to meet nutrient requirements, but also for compatibility with the horse's GI tract.

Feeding Your Horse

When you feed your horse, consider its age, weight, workload and stage of growth to determine dietary needs. Some horses are “easy keepers” (meaning it is easy for the horse to keep weight) and require fewer calories than others. Other horses are “harder keepers” and require special attention in order to keep weight. It is important to know how to feed your horse and to make sure it gets all the nutrients it needs. The nutrient needs of a horse are published in the current *Nutrient Requirements of Horses* (NRC, 2007). Consult with a veterinarian or horse nutritionist to help get you on the right track.

Six Types of Nutrients

A horse requires six types of nutrients and each nutrient has an important role in the horse's body and is needed to keep the horse healthy. Those nutrients are:

- Water
- Carbohydrates/Fiber
- Fats
- Proteins
- Vitamins
- Minerals

WATER

Water is the most important metabolic component of nearly all living things as the body is made primarily of water. Water performs many tasks in the body. It makes up most of the blood, which carries nutrients to cells and takes waste products away. In addition, water is the body's built-in cooling system; it regulates body heat and acts as a lubricant. A horse drinks about 10 to 12 gallons of water daily, depending on the work it is doing. In hot weather, a horse may drink up to 15 to 20 gallons of water. In cold weather, water heaters may be needed to prevent the water from freezing, so the horse can access enough water to avoid dehydration. Salt should always be available, free-choice, for a horse to consume the amount of water it needs.

CARBOHYDRATES

Carbohydrates (also known as *carbs*) are the horse's main source of fuel and make up the bulk of the diet. After carbs are digested, blood carries the resulting energy to the body. Carbs power muscle movement to walk, run, breathe and blink eyes. Carb energy also helps the horse to maintain its body condition, temperature, and metabolic rate.

Carbohydrates are complex compounds made up of carbon, hydrogen and oxygen. They consist of sugars, starch, cellulose, hemicellulose, and lignin (which can arguably be classified as a non-carbohydrate).

- *Sugars and starch*, contained in grains, provide simple sugars such as fructose, glucose, and galactose. They are very digestible by both the horse's small intestine and microbe population.
- *Cellulose, hemicellulose, and lignin* are the fiber component of carbohydrates found in hay and grass. Lignin is the very tough part of plants and not digestible. Cellulose and some of hemicellulose make up most of the horse's daily energy requirements. They are more complex carbohydrates that can only be broken down because of the small microbes in the horse's hind gut. They are harder to digest but still necessary for every horse's diet.

FAT

Fat or oil is another source of energy. Like carbohydrates, fat is made up of carbon, hydrogen and oxygen and provides energy for movement and heat. The energy in fat is more concentrated than the energy in carbohydrates. Fat has 2.25 times more energy per gram than carbohydrates and is very digestible by the horse.

PROTEINS

Proteins supply material for body tissue maintenance and repair. During digestion, proteins break down into amino acids. Amino acids are needed for building muscles, bones, internal organs, blood, and reproductive cells (sperm and eggs). Skin, hair, hooves and many other parts of a horse also are made of protein.

Protein not needed to maintain or build a horse's body is either converted into energy or passed through the urinary tract. Total protein in feeds is measured by crude protein (CP). The quality of it for horses is determined by the amount and variety of essential amino acids (for example, lysine, methionine and threonine).

VITAMINS

Vitamins are needed in much smaller amounts than other nutrients, but they are just as vital. Each vitamin has a different job in the body.

- *Vitamin A* - vision, skin and coat renewal, and hormone production
- *B-vitamins* - an array of vitamins that play a role in metabolism and health
- *Vitamin C* - collagen and wound healing
- *Vitamin D* - calcium absorption and regulation and bone development and repair
- *Vitamin E* - cell protection (antioxidant)
- *Vitamin K* - blood clotting

Vitamins are classified into two categories based on how they are absorbed, stored, and excreted by the body, *fat-soluble* and *water-soluble*. Vitamin A, D, E, and K are fat-soluble vitamins. These tend to be stored in the body which means an excess can build up causing toxicity. B vitamins and vitamin C are water-soluble meaning any not used up right away by the body will be excreted and not stored. Most vitamins are produced in the body at some level. Vitamins A and E are not produced in the horse's body and must be obtained from diet.

While a vitamin deficiency can have a negative effect on a horse's health, providing too much of a vitamin can also be just as dangerous. A horse in good health being provided adequate high-quality forage usually gets an adequate amount daily of needed vitamins. Consult a veterinarian or nutritionist when considering vitamin supplementation.

MINERALS

Of all the nutrients needed, minerals make up the smallest amount of the weight of a horse's diet, yet they are very important. For example, without iron, blood cannot carry oxygen to the body's cells. Without calcium and phosphorous, bones and teeth do not form properly. Minerals also help the horse digest fats, carbohydrates and proteins.

Minerals are divided into two categories based on the quantity needed, macro (calcium, phosphorous, magnesium, potassium, sodium, sulfur and chloride), micro or "trace minerals" (iodine, copper, zinc, iron, manganese, cobalt, and selenium).

Some minerals rely on or affect the use of other minerals in the body. This means minerals should be provided in the right balanced ratio to prevent deficiencies and toxicities. For example, Feed calcium and phosphorous in a 2:1 ratio (two parts calcium for each part of phosphorous) in the total diet. An imbalance of these minerals can cause development bone diseases, especially in young, growing horses.

Types of Feeds

Your horse can get essential nutrients from many different sources that can be categorized into two main types, roughage and concentrates.

ROUGHAGE/FORAGE

Roughage, in the form of hay or grass, should make up the bulk and be the foundation of a horse's diet. Horses are herbivores designed to graze continually (up to 18 hours per day). *Horses will voluntarily consume 1.5 – 3 percent of their body weight per day on forages (on a dry-matter basis), with the average being 2 percent.* Grass hay or alfalfa hay, or a combination of the two, are good sources of roughage. Most horses do best on a grass-based diet (whether from pasture or hay). In fact, some horses only need good quality grass. Alfalfa can be added to the diet when additional protein or calories are needed.

Forage sources (hay or pasture) can be tested (for a nominal fee) to assess the protein, carb, fat, vitamin and mineral amounts. This can help you decide if adding a vitamin-mineral supplement, different sources of forage, or a concentrate is ideal for your horse.

Hay

Hay comes chopped or cubed, in pellets or, most common, in long-stemmed baled hay. Many horse owners feed straight grass or a combination of grass and legume (such as alfalfa) to their horses. Grasses used as hay include brome, orchard, and timothy or prairie grasses native to many areas of the country.

- *Long-stem hay* is the traditional baled hay. It is cut, cured, and baled or crimped. It can be bundled in 50 to 80 lb. small square bales or large round or large square bales that can weigh up to 1-ton (2,000 lbs.).
- *Chopped hay* is cut into three or four inches long. Chopped hay is more common in the Midwest and not usually fed to horses in this region.
- *Hay cubes* are about 1 inch wide and 1- to 3-inches long.
- *Hay pellets* are ground dehydrated hay compressed into small pellets.

From the types of hay above, long-stem hay is the first preference for horses. Hay cubes and pellets are designed for elderly horses, horses with dental problems, or when long-stem hay is otherwise unavailable.

Horses need good-quality hay (free of dust, molds, weeds, or other toxins). Hay that is musty (or shows other indications of mold or heating) and hay contaminated with dust, weeds and other foreign materials can be unhealthy for a horse. Always check hay for mold and do not feed moldy hay to horses as it can cause severe digestive upset, colic and even death.

Good-quality hay should be bright green, leafy, and fine textured with a fresh, pleasant aroma. Color can be an indicator of nutrient content, particularly of vitamin integrity; bright green usually indicates that the vitamins have not been destroyed, whereas yellow/tan hay suggests sun and weather damage has likely depleted the vitamin content. Most nutrients in hay are found in the leaves; therefore, leafy hay is a valuable source of nutrients. Leafiness is influenced by variety, maturity when cut, weather conditions while growing, and curing procedures. Dust is objectionable in any feed for horses--it not only reduces the taste of the hay, it also aggravates respiratory problems. Sprinkling or dunking dusty hay in water can reduce dust. In the field, heavy rain on cut, drying hay leaches energy and protein from the hay.

Hay baled before it is dry enough loses nutrients through fermentation or heating in the bale. This sometimes starts fires through spontaneous combustion in barnyard stacks of stored, baled hay. Hay like this will not provide the nutrients needed so is unacceptable for horses.

Pasture

Well-managed pastures reduce feed costs and provide a natural source of energy, protein, vitamins and minerals to animals. An exercise lot with a few blades of grass is not a pasture, such a lot, or overgrazed pasture, is not a source of nutrients and can be a serious source of internal parasites. If animals are allowed to graze on a pasture too long, the pasture may become over-grazed and the grass may be killed.

Some of the basic requirements for a good pasture are:

- A supply of appetizing plants such as grasses or legumes.
- A paddock ('sacrifice lot') or stall to keep your horse for part of the day. Most small acreage pastures can only be grazed a couple hours each day to minimize over-grazing. Only use pastures for a limited amount of time for exercise and grazing based on the number of acres and horses.
- A year-round supply of fresh, clean water.
- Access to free-choice plain, white salt.
- Shelter from wind, cold and sun.
- A safe, durable fencing
- No poisonous plants (see Common Poisonous Plants of Colorado).
- No equipment, holes or other dangerous materials in the pasture.
- Manure and mud management or removal on a regular basis to reduce parasite burden and improve general cleanliness of the field.

Lush pasture forages can be dangerous (due to high sugar content) in early spring and may cause founder (laminitis). Introduce horses gradually to pastures by slowly increasing their daily grazing time. Some horses can become overweight on good spring pasture and may need to have their grazing time limited.

CONCENTRATES

Cereal Grains

Cereal grains such as corn, oats and barley are known as grain-based concentrates. Grains are lower in fiber and higher in energy than roughages. The grain should be clean, mold and insect-free, with a bright color. Grain quality is just as important as hay quality. Grains may be cracked, steamed or rolled, but if ground too finely, may cause respiratory problems, ulcers, or colic.

Oats are the safest and easiest grain to feed with hay because it is high in fiber and higher in protein than corn. Corn has the highest energy content of any grain and can put weight on a horse quickly. Barley is like corn in terms of energy and protein content. All grains are low in calcium, but high in phosphorus, therefore a well-formulated feed is the most ideal way to offer grains to keep the nutrients better balanced.

Formulated Feeds

Formulated feeds can be made up of cereal grains, grain by-products, forage-based products, or a blend of all of the above to balance the nutrients. *Concentrated mixes* are cereal grains with supplements or pellets added to balance the nutrient content of the mix.

Complete feeds are a grain mix that is high in fiber because it contains forage or high-fiber by-products such as soy hulls, wheat middling or beet pulp. Complete feeds can be textured, pelleted, or extruded (puffed up like dog food). Some are specially formulated for certain classes of horses (such as performance, growing, lactating or aged horses). *Even if you are feeding a commercial complete feed, you will still always feed hay.*

Current research recommends that horses get calories from a fat and fiber-based commercial feed, particularly those that had a history of obesity, colic, or laminitis (or other metabolic-related disorders). Fat and fiber-based feeds can be safer than grain-based feeds.

SUPPLEMENTS

Protein and/or vitamin-mineral supplements can be added to the diet to increase the diet's fortification. The most important supplement is plain, white salt. *All horses should have free-choice access to plain, white salt.* Salt can be provided in block form, loose form, or added to grain mixes.

Offering other vitamin and mineral supplements to the diet should only be done if the horse is deficient. Be aware that adding a "cocktail" of supplements can be dangerous and cause vitamin or mineral toxicities. If you are feeding a commercial grain or completed feed (that has been formulated correctly), it is unlikely that additional supplements are necessary. Most commercial diets are formulated by trained nutritionists who follow NRC guidelines to take the guess work out of nutrition for you. Read labels closely and follow feeding instructions. If in doubt, consult a veterinarian or nutritionist for advice.

General Rules for Determining a Horse's Ration

The nutrient requirements of a horse vary with its age, weight and the amount of work it performs (NRC, 2007). Hay (test hay for nutrients to see if a vitamin-mineral supplement is needed) can be a sufficient feed for a mature horse that is ridden very little (less than 3 hours per week). With an increase in work, grain can be added to a horse's diet to meet caloric needs. The best way to determine these needs and how much concentrate to offer your horse is to routinely assign a body condition score to the horse. Then the amount and type of feed can be adjusted until the horse is within the ideal condition. Body condition scoring is outlined in Figure 13 and Table 3.

Be sure not to over feed grain to horses as it can cause digestive upset and lead to colic. When too much grain is fed, much of it escapes digestion in the small intestine and spills into the hindgut. The microbes in the hindgut that are needed for fiber will digest it rapidly, producing large amounts of gas and acid, both of which can cause discomfort and manifest into colic and, in some cases, laminitis. It is recommended that horses *be offered concentrates sparingly and according to label instructions*. It is also recommended that horses of average size (1000 – 1100 lbs.) should be fed no more than five lbs. of grain per feeding. Therefore, if horses require more to meet their requirements, they should be fed grain in two to three feedings per day or switched to a fat-and-fiber based complete feed that has less potential of causing digestive upsets if fed in higher amounts.

Table 2. Guideline for daily feed amounts required by the average 1,100 lb. horse.¹

Class of Horse	Total Feed Intake (lbs)	Hay (lbs)	Concentrates (lbs)
Adult, no work ²	20-25 lbs	20-25 lbs	None
Adult, light work ²	20-25 lbs	18-23 lbs	1-2 lbs
Adult, Moderate work ²	20-25 lbs	17-22 lbs	3-5 lbs
Adult, Heavy work ²	20-25 lbs	15-20 lbs	5-7 lbs
Adult, Very Heavy work ²	20-25 lbs	15-20 lbs	7+ lbs

¹Values in this chart are reported on a dry-matter (DM) basis and are derived from the Nutrient Requirements of Horses (NRC, 2007). Note that not all "concentrates" are created equal and are not the same in terms of caloric content. Therefore, following manufacturer's recommended feeding rates and feed accordingly. If feeding less than the recommended feeding rate it may be necessary to supplement with a complete vitamin and mineral supplement.

²Weekly workloads for no work, light, moderate, heavy and very heavy exercise categories are defined as follows: "no work" = sedentary / no exercise, "light work" = 1-3 hours/week, "moderate work" = 3-5 hours/week, "heavy week" = 4-5 hours/week, and "very heavy work" = 6-12 hours/week.

Use the above chart as a general rule. More precise calculations can be found on the Ration Balancing worksheets at the end of this chapter or in Appendix III.

Some other important rules of thumb for maintaining the health of the horse's digestive system are to feed consistently. Instead of feeding one large meal (never recommended), *feed two or more smaller meals at the same times each day*. The horse's gut functions best with small amounts of feed moving through it regularly, keeping it somewhat full. This is best accomplished by trying to maximize the amount of forage being fed in the diet and minimize the amount of grain while still meeting the horse's requirements. This is not to say that grain should not be fed, but only feed the amount necessary to provide what is lacking in the forage. In addition, horses should have constant access to plenty of fresh, clean water and free-choice, plain, white salt for the gut to function normally.

When determining a horse's diet, always keep in mind the following:

- Age and stage of life (growing, gestation, lactation, aged)
- Weight and body condition score
- Level of activity or work (none, light, moderate, heavy)
- Nutrient content of the available feed. Send forage in to a commercial feed-testing laboratory. Contact your local CSU Extension county office for the name of the laboratory nearest you. If you cannot have your feed tested, use the average values listed in Table 6: Nutrients in Common Horse Feeds, page 40.
- The amount (lbs.) of forage your horse should eat. This usually is calculated as 1.5 to 3 percent (2 percent average) of the horse's body weight on a dry-matter basis.
- The weight of each feed provided to the horse. Provide forages and concentrates by weight rather than volume. This will provide a more consistent and reliable diet over time.

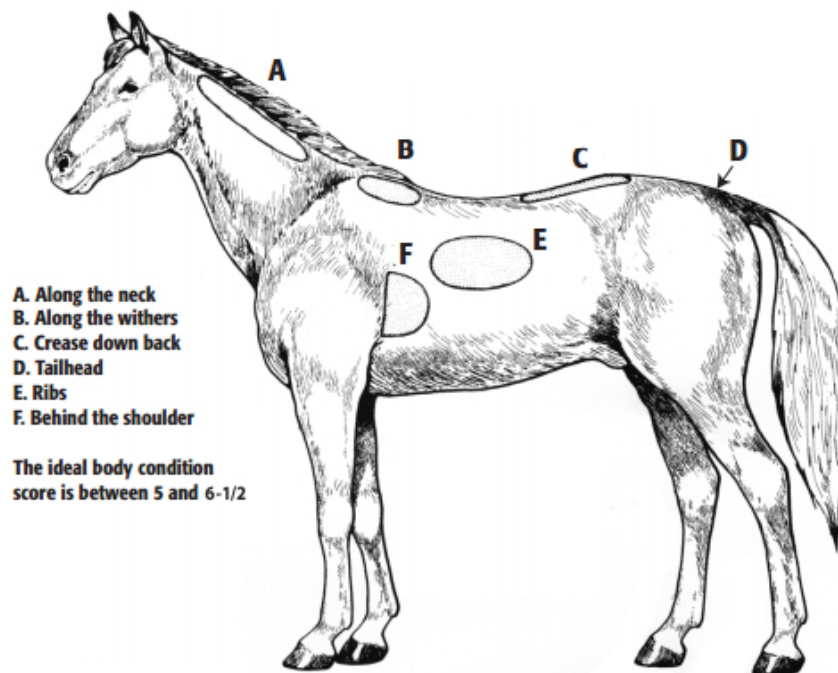


Figure 21. Diagram of areas emphasized in body condition score.
Visual appraisal areas used when determining body condition score.
Figure accessed from www.aaep.com.

Description of Body Condition Score System

(See Figure 19 for area on the horse where body condition is evaluated)

1. Poor

Animal is extremely emaciated. The spine, ribs, tailhead, and hooks and pins project prominently. Bone structure of withers, shoulders and neck are easily noticeable. No fatty tissues can be felt.

2. Very thin

Animal is emaciated. Slight fat covering over base of spine projection, transverse processes of lumbar vertebrae feel rounded. Spine, ribs, tailhead, and hip bones are prominent. Withers, shoulders and neck structure are faintly discernible.

3. Thin

The fat built up about halfway on spine projection cannot be felt. Slight fat cover on ribs. Spine projection and ribs are easily discernable. The tailhead is prominent, but individual vertebrae are not visually identified. Hip bones appear rounded but are easily discernible. Withers, shoulders and neck are accentuated.

4. Moderately thin

Negative crease along back. Faint outline of ribs is discernible. Tailhead prominence depends on conformation but fat can be felt around it. Hip bones are not discernible. Withers, shoulders and neck are not obviously thin.

5. Moderate

Back level. Ribs are not visually distinguished but are easily felt. Fat around tailhead is beginning to feel spongy. Withers appear rounded over spine projection. Shoulders and neck blend smoothly into body.

6. Moderate to fleshy

May have slight crease down back. Fat over ribs feels spongy. Fat around tailhead feels soft. Fat is beginning to deposit along the sides of the withers, behind the shoulders and along the sides of the neck.

7. Fleshy

May have crease down back. Individual ribs can be felt, but noticeable filling between ribs with fat. Fat around tailhead is soft and fat is deposited along withers behind shoulders and along the neck.

8. Fat

Crease down back. Difficult to feel ribs. The fat around tailhead is very soft. Area along withers is filled with fat. Area behind shoulder filled in flush. Noticeable thickening of neck. Fat deposited along inner buttocks.

9. Extremely fat.

Obvious crease down back. Patchy fat appearing over ribs. Bulging fat around tailhead, along withers, behind shoulders and along neck. Fat along inner buttocks may rub together. Flank filled in flush.

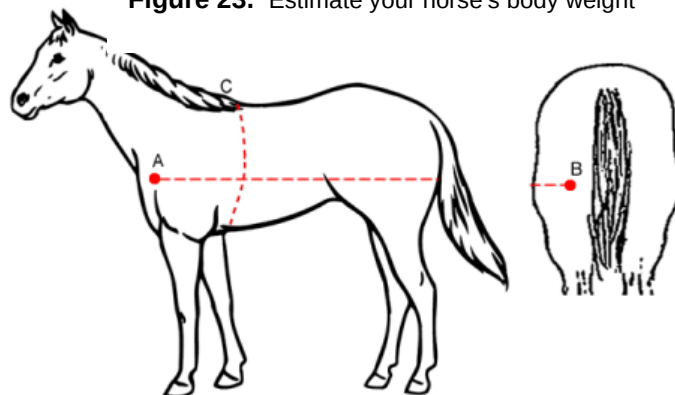
Reference: Henneke, D. R., G. D. Potter, J. L. Kreider, and B. F. Yeates. 1983. *Relationship*

Figure 22. Henneke's Body Condition Scoring System

Weighing Your Horse

Not all horses (and ponies) weigh 1,100 lbs, so it is important to use Table 2 as a guideline and adjust according to your horse's actual weight. To most accurately design the appropriate feeding program for your horse, it is a good practice to weigh your horse at least annually. The easiest way to weigh a horse is using a platform scale or a truck scale (weigh with the horse on, then weigh with horse off the trailer). If a scale is not available, your horse's weight can be determined using a mathematical equation (see Figure 23).

Figure 23. Estimate your horse's body weight



1. Measure the length of body from, from the point-of-shoulder (A) straight back along the horse's side, and to the point of the buttock (B). The tape goes around the corner of the hip and to the actual point of the buttock (about half the distance from the corner to the tail).
2. Measure the circumference (heart girth) of body (C). Measure from the base of the withers, down under the belly, just behind the elbow and foreleg, and all the way back around.
3. After these measurements are made in inches, use the following formula¹.

$$\frac{(\text{heart girth} \times \text{heart girth} \times \text{body length})}{330}$$

Example:

Heart girth (70") X heart girth (70") X body length (65")
divided by 330 = 965 pounds.

$$70 \times 70 = 4,900$$

$$4,900 \times 65 = 318,500$$

$$318,500 \text{ divided by } 330 = 965 \text{ pounds}$$

Tips for increasing accuracy and safety

- Make certain the animal is standing squarely on level ground.
- Have someone stand on the opposite side to help with the girth measurement.
- Make sure the tape lays flat and is not twisted.
- Pull the tape snug.
- When using a weigh tape, position the tape according to the manufacturer's directions.
- A cloth measuring tape is preferred.
- Be calm, don't rush in. Make sure the animal is comfortable with the measuring tape.
- When monitoring an animal's weight over time, it is best to have the same person using the same method.
- By following a set procedure, you will be able to monitor change that can be used as an indicator of health.
- The weight estimation formulas and weigh tapes may be used effectively for many animals but are not highly accurate for pregnant animals or those with extreme conformational irregularities.
- Keep a record that you can refer back to over time.

¹Gibbs, P.G. and D.D. Householder. *Estimating Horse Body Weight with a Simple Formula*. Texas A & M University. (<http://animalscience.tamu.edu/files/2012/04/equine-estimating-horse-body-weight5.pdf>)

Adapted from University of Arizona Cooperative Extension, *How Much Does Your Animal Weigh?* Susan Pater, 4-H Youth Development Agent <http://ag.arizona.edu/backyards/articles/winter07/p11-12.pdf>

Feeding Tips

These helpful hints will help you care for your horse nutritionally.

Provide high quality forage (hay) with a complementing grain to balance the horse's diet. Feed by weight, not by volume.

Always maintain at least half of the ration as forage, such as hay or grass.

Never feed moldy or dusty hay, grass or grain.

Never feed lawn grass clippings, because they are commonly moldy and may contain foreign materials and chemicals.

Ration changes should be gradual over a minimum of five days to prevent digestive disturbances.

Because a horse's stomach is very small and cannot hold a large amount of feed at one time, feed at least twice a day on a regular schedule. Some horses benefit from three or more feedings per day. But don't overfeed your horse; too much feed at one time can cause founder.

Keep feed and water containers clean. Check and clean water buckets and tanks regularly.

Have fresh, clean water available at all times-except to a hot horse. A hot horse needs to be given water slowly until the horse cools.

Watch your horse while it eats and inspect feed containers daily to detect abnormal eating or drinking behaviors.

Have your veterinarian check horse's teeth annually for sharp points that interfere with chewing. Floating sharp edges of teeth will increase feed efficacy. If a horse dips its mouth in water while eating, it may have a sharp tooth. Tilting head to one side while eating grain may indicate a tooth problem.

Proper exercise improves appetite, digestion, muscle tone and mental health for horses.

Table 4: Common Poisonous Plants of Colorado

Plant Name	Description	Symptoms
Arrowgrass	Grass-like, with thick leaves, fruit	Nervousness; trembling or jerking muscles; either shallow, rapid respiration or slow, deep breathing; convulsions; death. Cyanide poisoning
Bindweed	Low-growing, vine-like weed, morning glory type flower	Seed causes severe colic.
Bracken Fern	Perennial ferns form with black root stocks, two- to four-foot long stems and fronds.	Weight loss, lack of coordination, depression, muscles twitching and convulsions
Chokecherries	Large shrub with flowers and small cherries, all plants in the <i>Prunus</i> family are poisonous	Nervousness, respiratory difficulty, convulsions, death. Cyanide poisoning
Death Camas	Early spring plant, leaves similar to wild onion but no onion smell, flowers are small and white	Salivation, colic, muscular weakness and staggering
Foxtail	Seed head similar to wheat with long, thin protruding “whiskers” (awns)	Mouth ulcers
Groundsel	Herb growing year-round with yellow flowers, flowers similar to asters	Staggering, depression, aimless walking, running into obstacles, cirrhosis of the liver
Houndstongue	Hairy, tongue shaped leaves, flowers reddish purple in color, seeds have Velcro type appendages to attach to clothing, hair, fur	The pyrrolizidine alkaloids cause irreversible liver disease
Larkspur	Grows to five feet, broad leaves, segmented with blue flowers, flowers resemble the cultivated delphinium	Repeated falling, nausea, rapid pulse and respiration, straddled stance, constipation, bloating, death.
Locoweed	Low-growing native plant with purple, white, blue or yellow flowers resembling sweet peas, produces pods like a pea or bean	Loses sense of direction, irregular gait, weakness, withdrawal, loss of muscular control, nervousness, unpredictability, chronic affliction or death
Lupine	Shiny green leaves, leaves are palmate (shaped like a hand) flowers of blue, white, pink, yellow or blue and white produces pods like a pea or bean	Nervousness, convulsions
Milkweed	Green plant that produces pods with many seeds with silky “parachute” type appendages; plant secretes “milk” from the stem when broken	Loss of muscle control, staggers and falls, respiratory difficulty
Mountain Mahogany	Large shrub to 6', oval leaves, flowers inconspicuous, seed has hairy twisted style, rarely grazed	Anxiety, labored breathing, rapid heart rate, diminished coordination, convulsions, death
Nightshades	Relatives of tomato, pepper and eggplants with similar looking leaves and flowers	Decreased salivation, colic, constipation, hemorrhagic diarrhea, dilated pupils and tachycardia
Oak	Trees and shrubs	Initially animals stop eating, depression, feces hard, dark followed by black tarry diarrhea, teeth grinding, and hunched back
Ornamental Plants	Laurels, rhododendrons, yews and oleander—all poisonous to some extent	Some may cause death.
Russian Knapweed	Thistle-type weed with purple flowers and black root, similar in appearance to diffuse knapweed,	Inability to chew

Sage	Shrub, leaves and stem have a fuzzy appearance, leaves will have sage smell when crushed.	Affected horses appear normal until disturbed or stressed; they then become uncoordinated and fall over. Strong smell on breath
Sudan/Sorghums	Broad-leafed grass similar in appearance to corn; commercially grown for livestock	Urinary incontinence, posterior weakness and diminished coordination, secondary urinary infections. Cyanide poisoning
Yellow Star Thistle	Leaves bear dense coating of cottony hair, bright yellow flowers, the base of the flowers have sharp spines	Twitching of mouth, flicking of tongue, holding mouth open, death through starvation or thirst
Water and Poison Hemlock	Flower heads in the shape of an umbrella, carrot relative, leaves can appear like a carrot leaf, Poison hemlock has purple blotches on the stem	Salivation followed by muscle tremors, convulsions, in-coordination pupil dilation, rapid heart rate, coma then death

For more information, or for help in identifying poisonous plants, contact your local Colorado State University Extension county office

Table 5: Daily Nutrient Requirement of Horses (Mature body weight of 500 kg/1,100 lb.) ^a as documented by the National Research Council

Animal	Weight kg	Digestible Energy (DE) Mcal	Crude Protein (CP) g	Calcium g	Phos- phorus g
Adult (>2 yrs old)					
No work	500	16.7	630	20	14
Light exercise ^b	500	20.5	820	25	18
Moderate exercise ^b	500	24.6	984	30	21
Heavy exercise ^b	500	32.8	1,312	40	29
Very heavy exercise	500	34.5	1004	40	29
Stallion (breeding season)	500	21.8	789	30	18
Pregnant Mare, < 5- 6-months	500	16.7	630	20	14
6-months	508	17.4	704	20	14
9-months	534	19.2	797	36	26.3
11-months	566	21.4	893	36	26.3
Lactating Mare, 1-month	500	31.7	1535	59.1	38.3
3-months	500	30.6	1468	55.9	36
6-months	500	27.2	1265	37.4	23.2
Growing Horses					
4-months	168	14.4	720	34	19
6-months	216	15.5	676	38.6	21.5
12-months	321	18.8	846	37.7	20.9
18-months	387	15.0	750	29	16
Light exercise	387	17.2	860	36	20
Moderate exercise	387	18.9	851	29	16
24-months	429	21.3	956	34	19
Light exercise	429	19.8	893	27	15
Moderate exercise	429	26.5	1,195	36	20
Heavy exercise	429	18.8	800	24	13
Very heavy exercise	429	26.3	1,117	34	19

¹Values in this chart are reported on a dry-matter (DM) basis and are derived from the Nutrient Requirements of Horses (NRC, 2007). See the appendix in the back for more detailed NRC recommendations of nutrients for 1,100 lb (500 kg) horses, to include foals, pregnant and lactating mares, and stallions.

²Weekly workloads for no work, light, moderate, heavy and very heavy exercise categories are defined as follows: “no work” = sedentary / no exercise, “light work” = 1-3 hours/week, “moderate work” = 3-5 hours/week, “heavy work” = 4-5 hours/week, and “very heavy work” = 6-12 hours/week.

Reproduced from Nutrient Requirements of Horses, 6th Edition (2007) courtesy of National Research Council of the National Academies.

Table 6: Nutrient Composition of Selected Feedstuffs (NRC 2001, Nutrient Requirements of Dairy Cattle)
All values on a dry matter (DM) basis unless otherwise noted

Type	Dry Matter % as Fed	Digestible Energy (Mcal/kg)	Crude Protein %	Calcium %	Phos- Phorus %
Hay Forage					
Mostly Grass Hay, immature	84.3	2.35	18.4	1.01	0.31
Mostly Grass Hay, mature	84.7	2.08	13.3	0.73	0.27
Mix Grass/Legume, immature	83.1	2.46	19.7	1.20	0.31
Mix Grass/Legume, mid-mature	85.3	2.30	18.4	1.04	0.32
Mix Grass/Legume, mature	89.7	2.11	18.2	0.97	0.37
Mostly Legume Hay, immature	83.8	2.49	20.5	1.30	0.30
Mostly Legume Hay, mid-mature	84.2	2.35	19.1	1.17	0.30
Mostly Legume Hay, mature	84.3	2.20	17.2	1.09	0.28
Legume Forage Hay, immature	84.2	2.62	20.5	1.56	0.31
Legume Forage Hay, mid-mature	83.9	2.43	20.8	1.37	0.30
Legume Forage Hay, mature	83.8	2.21	17.8	1.22	0.28
Oat, Hay, headed	85.0	2.16	9.1	0.37	0.22
Pasture Forage					
Grass, cool season, veg.	20.1	2.39	26.5	0.56	0.44
Legume Forage, veg.	21.4	2.71	26.5	1.31	0.37
Concentrates					
Barley, rolled	91.0	3.67	12.4	0.06	0.39
Beat Pulp, no molasses	88.3	2.80	10.0	0.91	0.09
Corn	88.5	3.73	11.9	0.03	0.65
Cottonseed meal	90.5	2.98	44.9	0.20	1.15
Oats, rolled	90.0	3.27	13.2	.11	.40
Molasses, beat sugar	77.9	4.06	8.5	0.15	0.03
Molasses, sugarcane	74.3	4.06	5.8	1.00	0.10
Soybean meal	92.2	2.42	28.4	0.48	1.00
Wheat Bran	89.1	3.22	17.3	0.13	1.18
Fats and Oils					
Vegetable Oil	100.0	9.19	0.0	0.00	0.00

Reproduced from Nutrient Requirements of Horses, 6th Edition (2007) courtesy of National Research Council of the National Academies.

Table 7: Nutrients in Minerals

Type	Dry Matter % as Fed	Calcium %	Phos- Phorus %	Sodium %
Dicalcium Phosphate (dical)	97	22.00	19.03	0.05
Limestone (calcperium carbonate)	100	39.39	0.04	0.06
Monocalcium Phosphate	97	16.40	21.60	0.06
Monosodium or Disodium Phosphate (XP-4)	97	---	22.50	16.68

PASTURE MANAGEMENT

Caring for your pasture is as important as caring for your horse. You are in the process of learning about the biology of your horse to better understand proper equine care. Similarly, understanding the basics of grass biology will help you become a better pasture manager.

Grass growth and response to grazing

Most Colorado pastures have cool-season perennial grasses (CS). These grasses usually begin to grow during the month of April. The energy the plant needs to grow new leaves in early spring growth from carbohydrates the plant has stored in its roots and crown (light colored part where the roots meet just at soil level). The plant uses carbohydrate "reserve" to produce young leaves. If the leaves grow big enough, the plant will replenish its carbohydrate reserve through photosynthesis which is carried on in the leaves. Photosynthesis is the process by which green plants capture the sun's energy in the leaves and convert and store it as carbohydrates.

If young leaves are removed by grazing too early in the season, the plant has to move its reserve again before it can replenish its carbohydrates. The plant will continue to use its reserves to grow yet another new leaf. If this is done too often, the plant will run out of energy, will weaken and eventually die.

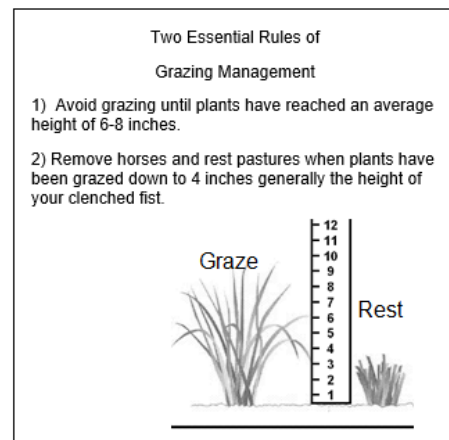
Cool-season grasses grow twice during the year, in the spring and the fall. Approximately 80% of CS grass grow in the spring and the remaining 20% will be in the fall starting in late August as the night start to become cooler. Autumn is a critical time in the grass growing cycle, shorter days and cooler temperatures trigger the plants to prepare for winter. Plants shift large amounts of carbohydrates from leaves to roots and crowns during this period. Those carbohydrates will provide energy for growth the following spring.

Resist the temptation to graze all the grass growth that often occurs in early autumn until after a killing freeze. Delay grazing during the fall season until grasses begin to go dormant in mid or late October. You will be rewarded with healthier grasses the next year.

As winter arrives, grass leaves die and turn brown. The leaves are no longer capturing energy for the plant. Winter grazing will not harm the grass but try to leave an inch or two of stubble to insulate the crown of the plant from cold winter winds. Also, keep horses off wet pastures to avoid soil compaction.

When to graze

Grass should average height of six to eight inches tall before grazing begins in the spring. When grass reaches that height, horses may graze until half or an average of four inches of the grass remains in the pasture. This grazing practice is called "take half-leave half". By leaving half of the grass in the pasture, you are leaving the plants with enough green leaves to provide energy for regrowth.



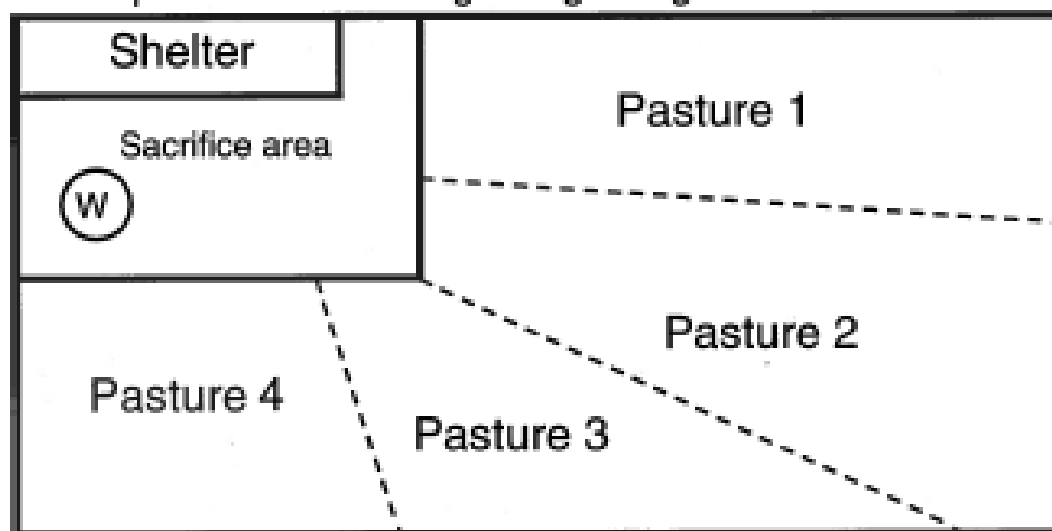
Remove animals from the pasture after grazing the grass down to four inches. Horses are very selective grazers and prefer lush, young grasses. The plants they have previously grazed begin to regrow and will have younger and lusher leaves than plants that have not been previously grazed. If given the opportunity, horses are likely to return to those same plants and eat the regrowth while ignoring more mature, plants. This grazing behavior weakens desirable plants over time by continued grazing. Removing animals from the pasture to allow the grazed plants to recover is highly recommended. To help animals to uniformly graze a pasture mowing to an equal height (greater than 4 inches) will help to animals to not be as selective in grazing and strengthen the grass plants by not allowing repeated grazing of the same plants.

Animals should be kept off the pasture until the grazed plants regrow to a height of eight inches. Irrigated pastures might be ready for grazing after 30 to 60 days of rest. On many dryland pastures, adequate regrowth does not occur until the fall or following spring.

Rotational grazing

Rotational grazing involves dividing a pasture into at least two pastures or several cells pastures which are referred to as paddocks. Pastures can be divided with portable fencing made of lightweight step-in posts and electric tape or similar products. In most cases, the more paddocks you can create the better, but that also requires more work to make sure a pasture is not over grazed.

Example of a rotational grazing design



Horses are allowed to graze until the grass averages 4 inches in height then they are removed from that paddock and moved to the next paddock or a holding area if other paddocks are not ready to be grazed. The paddock that was just grazed should be allowed to rest and regrow to a minimum of six to eight inches before animals are returned to graze the grass again. Using these principles and an appropriate number of horses for the area (known as stocking rate), a three-acre pasture divided into six paddocks can provide two to three time the number days of grazing during a rotational cycle when compared to just turning the horses out into the pasture to continuously graze.

Confining horses to a smaller area of the pasture reduces selective grazing, resulting in more complete utilization of the available forage. In addition, providing rest periods from grazing allows the grass to recover, which maintains desirable species and makes plants more competitive with weeds.

The appropriate size for grazing cells varies depending on the productivity of the pasture, number of animals, and length of time the animals spend in the cell. Ideally, cells are sized so that animals consume about half the available grass in about seven days. Don't expect to achieve this goal every year. Pasture productivity can vary greatly from year to year depending on climatic conditions.

Create and Use a Sacrifice Area

A "sacrifice area" is a dry lot, pen, corral, or stall run where horses can be housed and hand-fed whenever pastures need a rest from grazing. In essence, this area is "sacrificed" to spare your pasture from overgrazing and hoof damage at critical times.

A corral, or sacrifice area, is an essential component of a rotational grazing system. The corral is an area to keep the horses while the grass rests and recovers from grazing. On most horse properties, animals will spend a majority of their time in the corral, not on the pasture.

Drought

Drought is a frequent occurrence in Colorado. During drought, grass growth is diminished, and grass root systems are damaged. Pastures need to be carefully grazed or rested during and after drought. It is best to reduce grazing in the year following a drought to allow plants an opportunity to rebuild root systems. A healthy, deep root system will help grasses to survive the next drought.

Grass quality

The quality of cold season (CS) grasses for your horse is always best early during the growth of the grass. The quality of grass refers to the amount of protein and energy that the horse can gain from eating the grass. Most of the energy and protein can be found in leaves, so the more leaves, the higher the quality and the more your horse can benefit from it, by converting the energy and protein into energy for work, or growth for the young horse (less than two years old). As the stems begin to grow from the grass plant the quality will decrease, and it will be lowest when the grass begins to produce flowers and seed. It is best for your animals to graze grasses when they are leafy, but not producing seed.

Laminitis or Founder

Grass can cause laminitis or founder in some horses, primarily animals that may be obese or heavier without much work. We must be careful with these animals early in the spring and late fall when the grass is lush, and the days are warm with nights that are very cool. The fructans, which are special sugars produced in the early spring or late fall grass leaves can overwhelm the digestive system and cause toxins to be released into the blood stream which causes founder. You do not have to be afraid to turn out your horse into spring or fall grass if they are fit or in good shape. But if you have a horse that has a history of founder or is very fat, you may want to limit the amount of time the animal grazes in the spring and fall.

You can do this by keeping them in the sacrifice area and then turn them out for a few hours (less than four hours). When starting to graze very lush grass you should always introduce all horses slowly to the grass by gradually giving the horse more time each day to graze. For example, you may allow your horse to graze two hours the first day and increase it gradually throughout the week, especially if you are concerned with animals that may have a history of founder or colic. You will want to make sure that these horses that have a history of founder and colic or are obese are off the pasture by 2pm which is the time when fructans are highest in the grass plant. During the summer when the nights are warm, grass founder or laminitis is generally not a problem. Another way of limiting a horse's access to graze is to use a muzzle when turned out to graze. A muzzle is like a dog muzzle but made for the horse. The muzzle has holes in the bottom that limits the horse to eating only small amounts.

Warm-season grasses

Besides cool-season grasses which are found throughout the state, there is also grasses which we call warm-season grasses (WS). Warm-season grasses grow as the name indicates during the warmer parts of the growing season. They will start their growth primarily during the months of June and July. Since they are growing during the heat of summer their quality tends to not be as good as cool-season grasses. However, they can be used for horses especially early in June when they are primarily leafy. But as the growing season goes on they are low enough in protein and energy that the horse will not do very well on them. Most of the WS grasses in the state of Colorado will be found on the plains region in the east and some areas in the west end of the state.

Horses evolved and developed on eating grass and it is still most horse's favorite food. Mature horses (older than three years of age) can do very well on just a forage diet if you manage the quality of grass and hay well. Most pasture problems, such as weeds and patchy grass stands, can be corrected with proper grazing management. Careful grazing management that emphasizes the health of the grass will reward you with strong, green, long-lived pastures. If you need help with setting up your grazing management, please contact your local extension agent for help.



Horse Pasture Management Tips

1. One 1,000-pound horse requires 600 pounds of dry forage each month. Non-irrigated pasture in Colorado produces 500 to 2,500 pounds per acre per year. Horses will trample grass, defecate on and be selective in grazing, so only 15 – 25% of actual forage may be usable. Following the "take half, leave half" principle will help maintain pasture health. Generally, a minimum of 29 acres of dryland pasture is needed to support one horse for one year with no supplemental feed.
2. Divide the pasture into as many equal units of approximately 1000 sq. ft. per horse and rotate horses before grass is grazed to minimum height of no less than 4". Under a four -unit system, graze each unit seven to 10 days, then rest for a minimum of 28 days or as long as it takes for the grass to regrow. For most small acreages, turn out on the pasture will be limited to several hours per day. Small acreage pastures should be thought of more as recreation for the horses rather than a main source of forage. (This guideline will vary greatly.)
3. "Take half, leave half" enables roots to store enough food to produce a healthy plant the following season, protects dryland pastures and allows irrigated pastures to be grazed more intensely.
4. Horses should be kept off pastures in the spring until grasses have grown to a 6 – 8" height (or height appropriate to type of grass). They are allowed to graze through the cells, then they are not allowed back into the first cell grazed until it has regrown to 6 – 8" height (or other appropriate height). Remove horses from the grass in the fall to allow the grasses time to prepare for winter and store energy for the following year.
5. Horses should not be let out into the pasture when it is wet and muddy or icy.
6. Give your horses extra feed if you do not have enough grass to support them. Confine horses pastured on small lots to pens and limit the time to graze and exercise. Otherwise, horses will devour or trample all vegetation in the pasture.
7. Provide adequate water in each grazing pasture. In large pastures, distribute water tanks equal distances apart to encourage even grazing throughout the pasture.
8. Control weeds that invade your pastures. Identify the weed and develop an appropriate management plan using cultural, biological, mechanical and chemical control methods. Spray weeds with an appropriate herbicide or mow before weeds go to seed. **Always read and follow label directions** for chemical substances. Don't spray around horses and follow the label for re-entry period prior to grazing.
9. Mow uneven growth to 4 inches after grazing to prevent spot grazing.
10. When possible, fertilize irrigated grass to increase production and the nutrients they contain. Test soil to determine how much nitrogen, phosphorus and potassium the pasture needs. A productive, established pasture requires 150 to 180 pounds of nitrogen per acre per year. Read fertilizer labels for guidelines on grazing after application.

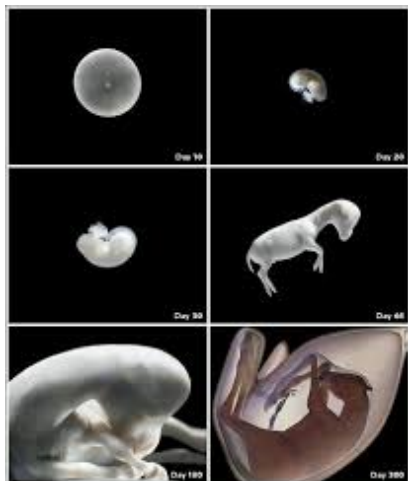
Provided by CSU Extension, Small Acreage Management. For more information on maintaining a pasture, contact your local Colorado State University Extension county office.

REPRODUCTION

Producing a newborn foal is an exciting experience but requires that the 4-H member has the help of a veterinarian and a responsible adult. Breeding, gestation, mare care, foaling and newborn foal care must all be understood to be successful.

Breeding

The first step of producing a foal is when the semen from the stallion fertilizes a ripe egg from the mare resulting in an embryo that develops into a fetus that matures sufficiently within the dam to be delivered as a viable foal.



<https://equestrian-living.com/blogs/news/9386813-horse-embryonic-post-natal-development>

This fertilization can be accomplished by natural breeding of the stallion and mare or by artificial insemination of the mare. See further explanation below.

Cycle of a fertilized egg

Horses only reproduce during certain seasons, so they are called seasonal breeders. In North America those seasons are spring, summer and early fall coincident with longer daylight hours. = Horses do not usually breed between mid-November and mid-February.

The longer daylight hours of Spring and Summer trigger the mare to develop eggs that are ripe to be fertilized. During these months the mare undergoes multiple **estrous cycles of approximately 22 days each**. Each estrous cycle has two parts: estrus and diestrus. During the 3-7 days of estrus while the follicle (small sac in the ovary that can become an egg) is developing and ovulates, the mare is receptive to the stallion. These signs may include: a desire to be around a stallion, making noises to attract a stallion, and turning her hips and tail toward a stallion. The mare is not receptive to the stallion during the second half of the estrous cycle or diestrus. She will reject a stallion and may try to strike, kick or bite him to show she is not interested.

If the mare becomes pregnant, she will not have another estrous cycle but if she is not pregnant the estrous cycle will begin again. Normally mares begin their estrous cycles starting in April and continue cycling through September.

Mares kept in stalls, in a lighted barn may start their estrous cycle as early as February. If a mare gets 16 hours of good light and 8 hours of dark each day, it may trick her body into thinking the days are long, and she will begin her estrous cycle early. Some horse owners use lights to start the estrous cycle early, but many prefer to breed mares in April or May when mares naturally begin their estrous cycle.

here are two main methods of breeding a mare. The first is called **natural service**. For natural service, a mare and a stallion are brought to the same location such as a farm, ranch or professional breeding facility. Mares are checked daily to see if they are in estrus by **teasing** to a stallion. Teasing is done by a **handler**, a person who has control of a mare or stallion with a halter and lead. They walk a mare to a stallion, or the stallion to a mare, and see how the mare reacts to him. If the mare reacts by showing signs of estrus, she will be prepared for breeding. Once prepared, the mare and stallion that will breed her, will be put together and allowed to breed naturally. The other method of breeding is by **artificial insemination**, referred to as AI. For AI, a mare can be checked by teasing to a stallion, or a veterinarian can use an **ultrasound scanner**, a medical machine that uses sound waves to produce a picture, to see if the mare is in estrus. Once the mare is in estrus, the veterinarian or an **AI technician** who is someone trained to perform artificial insemination, will breed the mare.

Several horse breed associations have rules about which breeding methods can be used. Be sure to understand these rules if you plan on registering your new foal with a breed association.

Gestation

Gestation is the period a mare is pregnant with a foal. It begins the day the mare is bred and ends when she gives birth to a foal. The number of days of the gestational period can range from 320 to 360 days depending on the breed. The average for most light horse breeds such as the Arabian, Thoroughbreds and Quarter Horse breeds, is 336-340 days.

Foaling

Once the gestation period is nearing the end, the process of **foaling (or parturition)**, giving birth to a live foal, will begin. A horse owner should prepare for their mare to foal. There are many tasks to complete before the mare does give birth. First, notify your veterinarian the mare is due to foal within the next month. This will prepare the vet to be ready if you call them with a question or an emergency when the mare is foaling. Next would be to prepare the paddock or stall you want the mare to foal in. The area needs to be cleaned and kept clean until the mare is brought in to foal.

Paddocks should have all manure, old feed, old hay or any other dirty objects removed. Waterers and feeders should be cleaned in the paddock. Any repairs need to paddock fencing should be completed to provide a safe area for foaling.

If a stall will be used for foaling, all old bedding should be removed. Stall mats, walls, feeders and waterers should be cleaned. Any repairs to the stall should be completed to provide a safe foaling stall. The best bedding for foaling in a stall is straw. The straw should be free of any grain, weeds or excessive amounts of dirt and dust. Keep two or three bales of straw ready to put in the stall when the mare is to be brought in. Stall size should also be large enough the mare can stand without possibly stepping on her foal. Most mares need at least a 12 foot by 12-foot stall. Larger stalls are better.

There are several signs a mare is preparing to foal. A few weeks prior to foaling, the mare's udder will begin to fill with milk. The teats will begin to be coated on the end with a waxy substance. The mare's abdomen will also start to drop down and her muscles will become relaxed. A day or two prior to foaling, milk may begin to drip from the teats, and the mare may begin to show signs of **colic**, pains in the abdomen related to her body beginning to prepare to deliver the foal. Signs of colic include the mare kicking at her belly, biting at it or touching the area with her muzzle. Once these signs are observed, a mare should be moved into her paddock or stall where she will be foaling.

The hours and minutes before foaling, a mare will have significant changes in her behavior. Most mares will stop eating and drinking. They will act restless, pace around their paddock or stall, lay down and get back up, and urinate often. Observation of the mare should happen every 20 to 30 minutes and be done as quietly as possible. Loud noises or seeing people may cause the mare to be stressed and not want to lay down to foal.

The act of foaling will begin when the **amniotic sac** appears. The amniotic sac is the protective membrane the foal grew in while inside the mare. The membrane will break, releasing a lot of fluid. This is sometimes referred to as the “water breaking.” If she was not already, the mare will then lay down and begin delivering the foal. It should take the foal 30 minutes or less to be born once the amniotic sac is broken. There is another sac covering the foal and will appear with the foal’s front feet and nose appearing first. Then the head, shoulders, ribs, hips and finally rear legs and feet will be delivered out of the mare.

If the front feet and nose do not appear within 30 minutes of the amniotic sac breaking, or anything else appears abnormal about the foaling process, call your veterinarian immediately.

New Foal Care

Once the foal is born, it is important to check their health and then give the mare and foal time to bond. First check to make sure the foal is breathing. If the amniotic sac is covering the head and nose, someone will need to clear it. An adult should enter the paddock or stall cautiously, making sure not to upset the mare. If the foal’s head is not covered by the sac, watch for the ribs to rise and fall with each breath and listen for the sound of air inhaled and exhaled. If the foal does not appear to be breathing, a knowledgeable adult should enter the paddock or stall. Using a piece of straw, tickle the inside of the foal’s nostrils. It will usually make the foal sneeze and begin to breathe.

Once you are sure the foal is breathing, keep a quiet observation of the mare and foal. The foal will first begin to try lifting its head and looking around. Then use the 1-2-3 rule for observing the foal: the foal should stand up in 1 hour after birth, begin trying to nurse within 2 hours of birth, and have its first bowel movement called the **meconium** within the first 3 hours.

The mare needs to be observed as well after foaling. The mare should stand up very soon after the foal is born. She should be attentive, smelling and nosing her new foal. The **placenta**, the sac the foal lived in while in the mare, should be passed by the mare within 3 hours after birth.

After standing

The most important thing for a foal to do is to nurse and get the first milk called **colostrum**. Colostrum is full of nutrition for a new foal and it contains **antibodies**, which are substances made to fight disease. These antibodies give the foal **immunity**. Immunity is the ability of a horse’s body to fight off disease causing organisms like a virus or bacteria. A foal should nurse many times during its first day to get plenty of colostrum and nutrition.

Sanitizing the **umbilical cord**, a long tissue that provided nutrients and oxygen to the foal during gestation, should be done as well. The cord can be dipped in an **antiseptic solution**, a solution which prevents infections, several times per day the first 2 or 3 days.

Following birth, the foal should be quite bright and active even before it stands. The first sign that something may be wrong with the foal is for it to be very quiet and sleepy. Normally, the mare will like the foal and encourage it to stand and nurse. If the mare is a first-time mother or has her own medical problem, she may not do this licking and stimulation. It is important then for people to rub the foal with towels and stimulate it to rise and nurse. If the foal does not respond normally within the hour guidelines state, the veterinarian should be requested. Newborn foals, like newborn human babies, can become sick very rapidly and can respond to treatment very rapidly. “Wait and see” is never a good policy with newborns.

If the foal progresses normally, share the good news with your veterinarian and discuss which examinations, vaccinations, or other treatments are needed for your newborn foal.



PREPARING FOR DISASTERS INVOLVING HORSES

It is easy to get paralyzed by fear when you think of or see media footage of animals in disasters. These thoughts and images show events that are overwhelming and unimaginable. However, rather than be frightened or fearful, be proactive and prepare. First, familiarize yourself with the most likely risks in your geographic region and take steps to prepare for or lessen the severity of these risks. Then go spend your time enjoying your horses.

In Colorado natural disasters are likely to be wildfires, floods, winter storms and tornadoes. The risk of each of these hazards will vary in your specific area. The general steps of preparation are common to “all hazards” and then modified for the exact event when it occurs.

Motivate yourself to prepare with the wisdom from an Animal Response Team Volunteer in Larimer County, CO: “The better prepared animal owners are for their animals, the better we can help them in a disaster.”

General Preparation:

The first line of preparation consists of common sense steps that are important in the event of a disaster but also improve your daily experience with your horse.

Know your neighbors: Plan together to help one another. Go beyond the basic steps of just exchanging contact information. Become familiar with each other’s animals and property. There are a lot of responsibilities with owning horses and it is important to have back up support. This may be as simple as glancing at the horses to make sure none are sick or injured or feeding when someone has to stay late at school or work. Be generous about returning the favor. These relationships are important on a daily basis as well as in tough times.

Identification: Microchip identifications, brands, and lip tattoos are permanent forms of identification and well worth the investment given the similar appearance of many horses. Temporary identification tags include waterproof luggage tags braided into the mane or tail, your telephone number spray painted, written with livestock marker, or even shaved on the body of the horse. Permanent markers can also be used on the hoof wall. Keep photographs of you and your horse that include the horse’s specific markings and a good shot of yourself as another way to confirm owner identification.

Vaccinations: Be sure your horse is current on vaccinations. Tetanus toxoid is given once per year. Due to the likelihood of increased mosquitoes after heavy rainfall, vaccinate for West Nile virus and Eastern/Western Encephalitis. Be current on Rabies vaccine since wildlife will often move into more populated areas after wildfires and floods. The rabies vaccination may be required for entrance to some disaster shelters because the disease is lethal and effects humans.

Brand Inspection, Health Certificates and Negative Coggins test: These can be required to cross state lines but may be waived due to the disaster conditions.

Medical Records: Copies of the horse's medical records should be kept in a waterproof sealed bag. This should include your name, contact number, and address as well as the name, age, breed, sex of horse, proof of vaccinations, health history, diet (grain and type of hay), exercise regimen (pastured or stalled), daily medication schedule, allergies and description of your horse's behavioral eccentricities like "bites, kicks, hates dogs, or can escape anything".

Water: Always have ample (12-20 gallons per day) available for each horse. Keep horse troughs clean and filled in case of electric outage, pipeline break or pump malfunction. A back up generator is helpful if you have many horses. In the case of the possibility of electrical outage for long periods, store water in garbage cans lined with plastic bags. If you have to use contaminated water, add two drops of chlorine bleach per quart of water and let stand for 30 min.

Feed: Always have at least 3 days and preferably 7 days of feed and hay available at your barn. You never know when you won't be able to get feed due to a personal emergency and horses are very susceptible to colic when their diet is changed suddenly.

Pastures and Barns: Walk around your pastures and barn on a regular basis. Inspect integrity of fence lines and gates. Remove or fix things that might injure your horses (downed electrical lines, scrap metal, dumped garbage, holes, exposed nails). Clear away brush and maintain a defensible space around buildings and barns in case of wildfires. Trim or remove trees that might fall on building roofs.

Trailer and Truck: Your vehicles should always be in proper working order (electrical system, good tires inflated, solid floor, hitch greased, registration up to date) and your horse(s) should be well accustomed to loading. Practice this!

Emergency First Aid Kit: Every barn and trailer should have a first aid kit available always.

- Bandages (leg wraps and quilts)
- Antiseptics
- Scissors/Knife
- Topical antibiotic ointments
- Tranquilizers
- Pain Relievers (phenylbutazone or Banamine®)
- Flashlight and extra batteries
- Extra halters/lead ropes
- Clean towels
- Fly spray

Emergency Tools: Every barn should also have these tools gathered in a central place and in good working order.

- Chain saw and fuel
- Hammer and nails
- Fence repair materials
- Wire cutters/tool box/pry bar
- Fire Extinguisher
- Duct tape

Emergency Evacuation Kit: Figure one includes this list. These items should be packed and available to take at a moment's notice.

Equine and livestock evacuation kit:

- 7-10-day supply of feed, supplements, and water with ample Water and feed buckets, hay nets
- Bandanas (to use as blindfolds)
- Batteries (flashlight, radio)
- Blankets
- Extra cash, ATMs may be down.
- Copies of veterinary records and proof of ownership
- Duct tape
- Emergency contact list (DVM, friends, relatives, police, hospital, doctors)
- First aid kit (see items suggested above)
- Flashlight
- Fly spray
- Grooming brushes
- Heavy gloves (leather)
- Hoof knife, nippers, pick, rasp
- Instructions
 - o Diet: record the diet for your animals.
 - o Medications: list each animal separately, and for each medication include the drug name, dose and frequency. Provide veterinary and pharmacy contact information for refills.
- Knife (sharp, all-purpose) and wire cutters
- Leg wraps and leg quilts
- Maps of local area and alternate evacuation routes in addition to GPS (in case of road closures)
- Non-nylon halters and leads (leather/cotton), Twitch
- Paper towels and trash bags
- Plastic trash cans with lids (can be used to store water)
- Portable livestock panels
- Radio (solar, hand cranked and/or battery operated)
- Rope or lariat
- Shovel
- Tarpaulins

BRAND AND HEALTH INSPECTION TIPS FOR EQUINE TRANSPORTATION

The Colorado State Division of Livestock Inspection (Division of Brand Inspection)

works with county sheriffs and Colorado State Patrol officers to check livestock transported over Colorado highways. Inspections control theft and illegal movement of animals. Anyone who transports livestock should carry proof of ownership papers such as a brand inspection. Breed registration papers are insufficient proof of ownership. Registered horses are not exempt from inspection laws. All horses, mules, hinnies and burros must have brand inspection papers when:

- transporting more than 75 miles, regardless of change of ownership
- transporting out of state, regardless of change of ownership
- there is a change of ownership including gifts, trades or sales

When transporting a horse across state lines, a health certificate and proof of a negative Coggins test are required. To obtain current health papers, contact your veterinarian.

A brand is not required for transport or ownership of horses and a permanent brand inspection card can be obtained without a brand. A brand helps distinguish one horse from another of the same color. Brands can be purchased, or a new brand can be registered with the State Board of Stock Inspection, with whom all brands must be registered to be legal. For further details on registering a brand, contact the brand office.

Brands, either hot iron or freeze, may have various locations on an animal including the jaw, shoulder, hip, or buttocks. In some states this depends on owner preference; in others the site is designated by the regulatory agency. Adopted Mustang horses will have a series of freeze brand marks on the left side of their neck just below the line of the mane. These marks designate that the horse is a Bureau of Land Management (BLM) horse and give the year of birth, plus a registration number. Freeze brands require much more specialized equipment and expertise but are usually much less traumatic for both the horse and owner.

Useful internet sites that help explain branding include:

1. <http://animalscience.tamu.edu/files/2012/04/equine-freeze-branding-horses2.pdf>
2. <http://www.flying45.com/freeze-branding-info.php>
3. <http://www.cowboyshowcase.com/brands.htm>
4. <https://www.equisearch.com/discoverhorses/the-history-of-branding>

Thoroughbred horses registered with the Jockey Club will have a tattoo located on the inside of their upper lip. This is a permanent means of identification that is not easily seen.



The use of microchip implants in the identification of horses has become increasingly popular over the last decade. The invisible microchip is usually placed in the left side of the neck by a licensed veterinarian in a method like that of giving an injection. Once in place, a radio frequency scanner can be used to detect the microchip. Many horse owners prefer this method of identification to exterior identification methods because it does not change the outward appearance of the horse. At the same time, it allows for the same chance of recovery if the horse is stolen. However, it may not deter theft in the same manner that a brand would.

In Colorado, up to \$3 of a brand inspection fee goes to the Colorado Horse Development Authority for education and promotion of the Colorado horse industry. This assessment fee supports educational programs such as Colorado State Extension and the 4-H Youth Development Program.

For more information on these laws, contact your local brand inspector or call the State Board of Stock Inspection, (303) 869-9160, to reach your local brand inspection office-also online at: <https://www.colorado.gov/pacific/agbrands> This site covers the current brand laws applicable to equines, how to apply for a brand if you do not have one, and also gives a list of local brand inspectors by the county they cover.

<http://www.articles.extension.org/pages/10325/permanent-identification-in-horses>

CONFORMATION, MOVEMENT & SOUNDNESS

Feet and legs

Study the following illustration of correct and incorrect leg positions commonly seen in horses. Imagine these lines as you study live horses to help you determine if the feet and legs are correct.

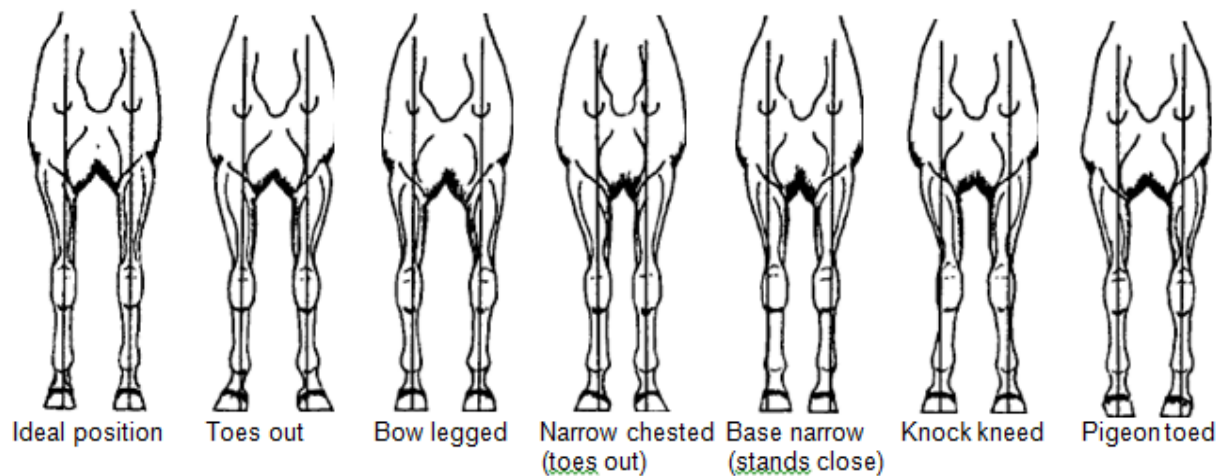


Figure 24. A view from front. A vertical line from the point of the shoulder should fall in the centers of the knee, cannon, pastern and foot. It divides the entire leg and foot into equal halves.

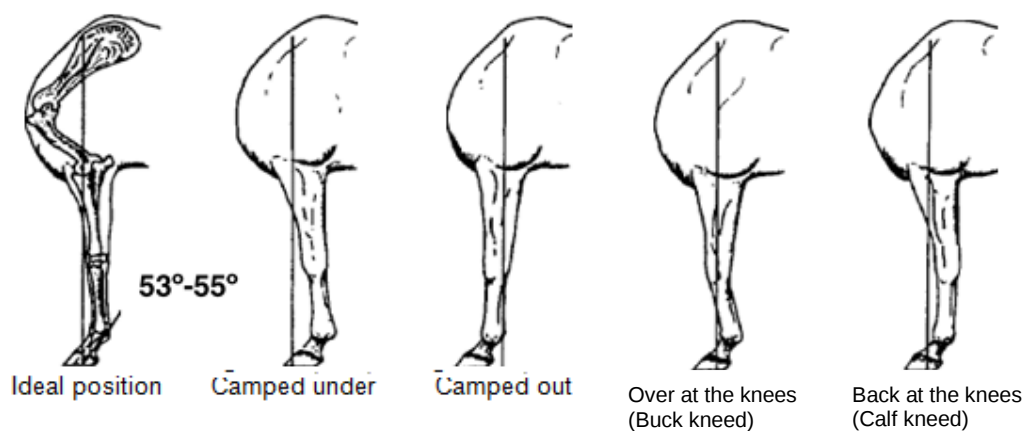


Figure 25. The front legs from a side view. A vertical line from the shoulder should fall through the center of the elbow joint and the center of the foot.

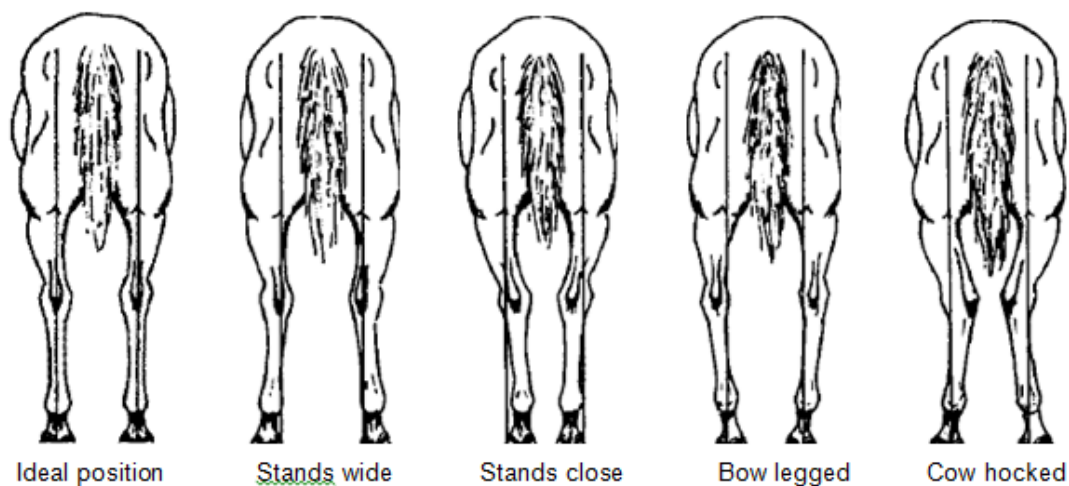


Figure 26. The hind legs from the rear. A vertical line from the point of the buttock should fall in the centers of the hock, cannon, pastern and foot.

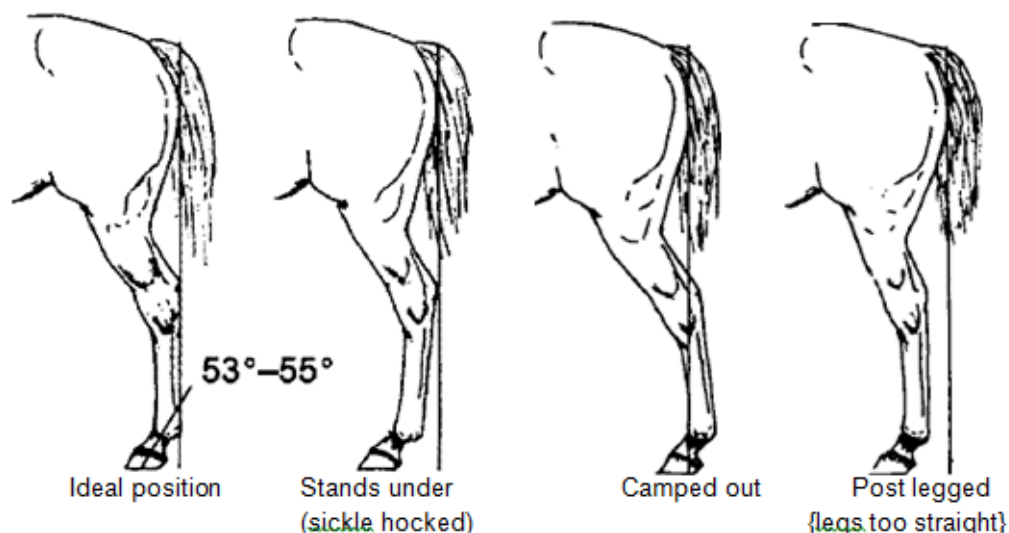


Figure 27. The hind legs from the side. The vertical line from the point of the buttocks should touch the rear edge of the cannon from the hock to the fetlock and meet the ground behind the heel.

The action of the horse should be straight and true. A horse may move in a crooked manner because of crooked feet and legs or because of being pulled off-balance as it is led. Watch how a horse moves to help determine if it has a straight action

Since few horses move perfectly true, it's important to know which movements may be unsafe. A horse that *wings in* can be more unsafe than one that *wings out* because it may trip itself. Some travel close, others travel wide. Observe the difference and determine how much value to place.

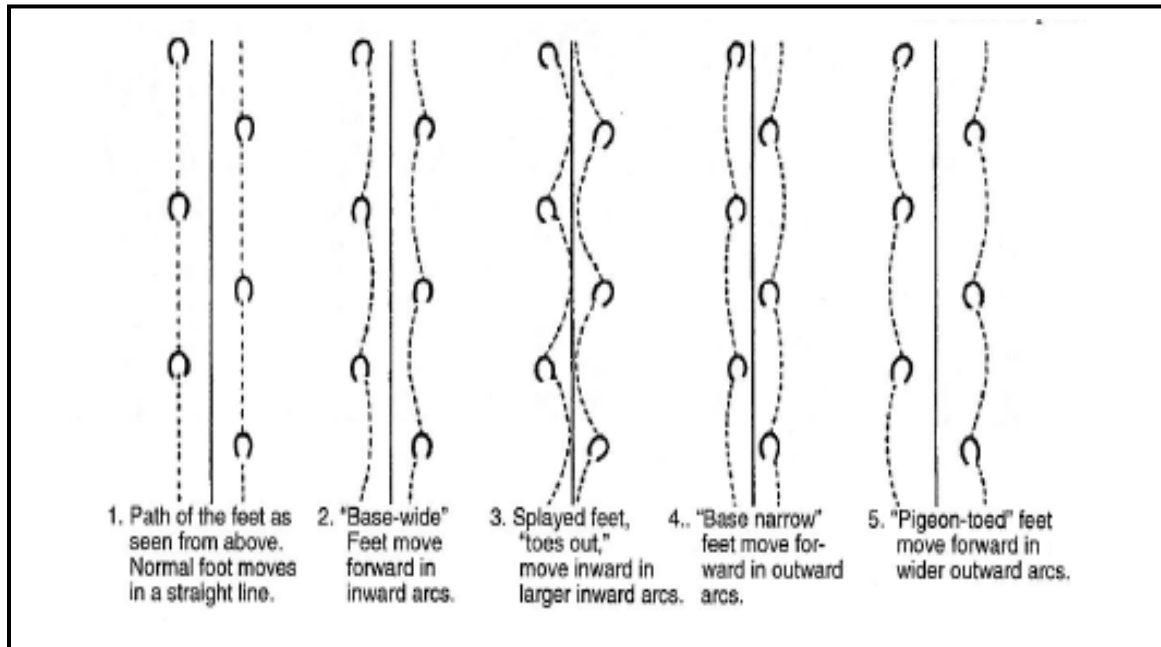


Figure 28. The path of flight each foot takes relates to the structure of the foot and leg.
Example 1 shows normal path. Examples 2 and 3 *wing in*, while examples 4 and 5 *wing out*.

Figure 29 shows how the length and shape of the hoof affects the path of flight or the arc of the foot as the horse moves. Trimming and shoeing influence this. Keep the hoof in its natural shape to avoid leg strain. The correct structure of feet and legs is important because of the shock and strain on these parts when a horse moves. If the body structure is unsound, the horse may break down in use. Evaluation of inherited unsoundness in body structure is especially important in breeding classes.

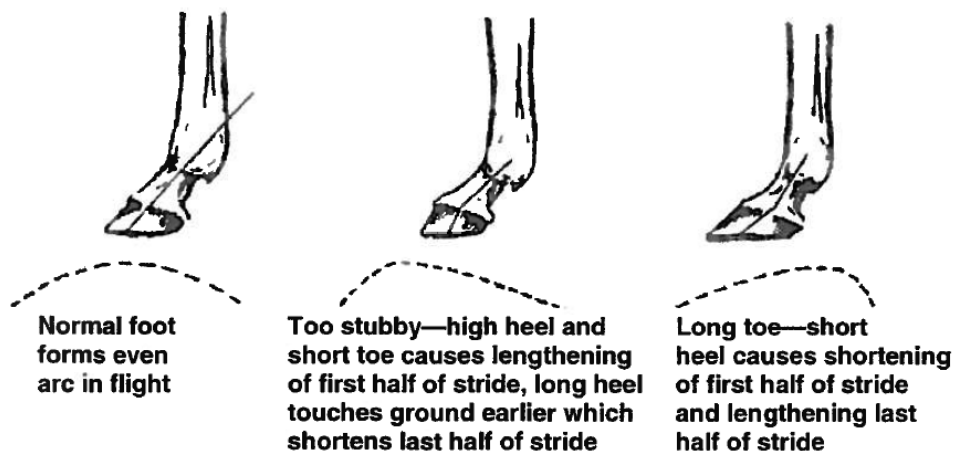


Figure 29. Length and shape of hoof affect the path of flight or the arc of the foot as it moves.

Blemishes, lameness and unsoundness

A horse that is unsound has imperfections that affect its ability to serve. Many unsound conditions are the result of weaknesses in body structure. These weaknesses can become worse when excess strain is placed on already weak parts. A lame horse is disabled so that movement, especially walking or trotting, is difficult and uncomfortable.

Blemishes are imperfections found on horses, but usually do not affect the horse's ability to serve. Old, healed-over wire cuts, rope bumps and saddle marks are blemishes.

No horse is perfect. Understand that common blemishes, lameness and unsoundness are judged on their importance in relation to the way you will use the horse.

Figure 30 shows a horse with the most commonly found unsoundness's.

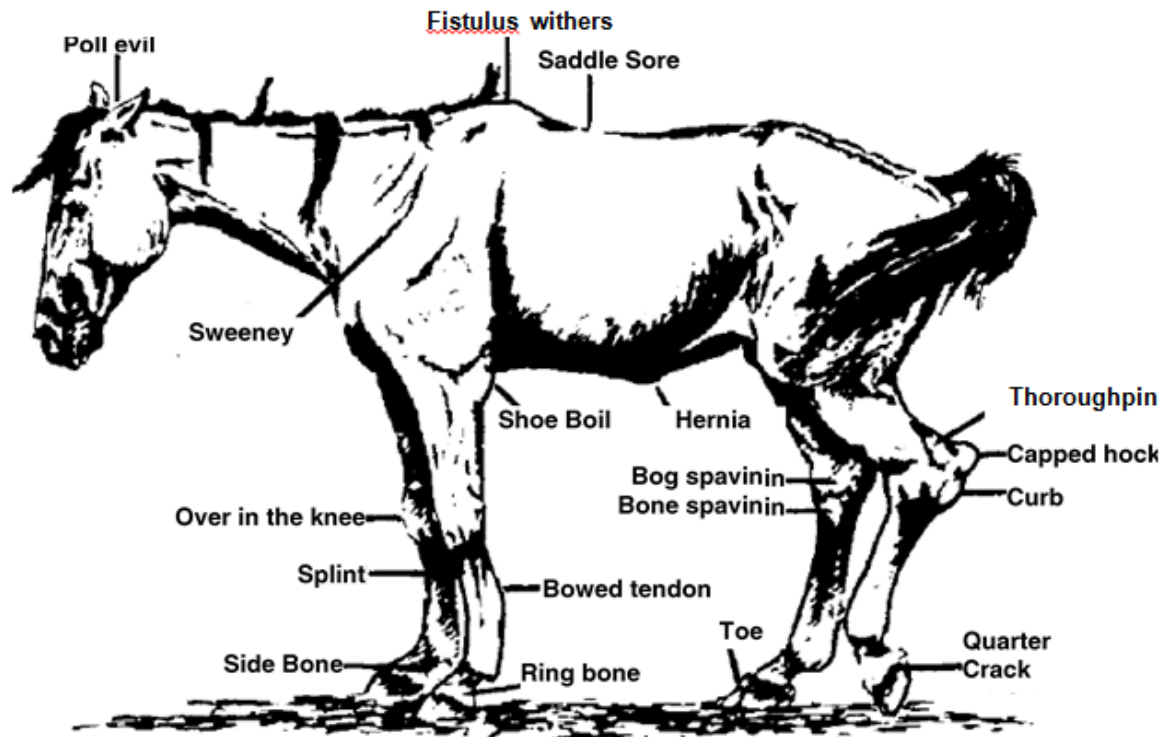


Figure 30. Unsoundness is weaknesses in the body structure

Definitions of blemishes, lameness and unsoundness

Poll evil – inflamed swelling of poll between ears.

Fistulous withers –inflamed swelling of withers.

Saddle sore --inflammation or wound caused by poor-fitting tack.

Thoroughpin – puffy swelling on upper part of hock and in front of the large tendon.

Capped hock –enlargement on point of hock, degree depends on stage of development.

Curb – hard swelling on back surface of rear cannon about four inches below point of hock.

Quarter or sand crack – vertical split in the wall of the hoof

Toe crack – vertical crack in the toe of the hoof, like a quarter crack.

Bone spavin or jack spavin - bony growth usually found on inside lower point of hock.

Bog spavin - meaty, soft swelling that occurs on inner-front part of the hock.

Hernia - protrusion of internal organs through the wall of the body, umbilical or scrotal areas are most common.

Shoe boil or capped elbow – soft, flabby swelling at the point of elbow.

Bowed tendons – enlarged, stretched flexor tendons behind the cannon bones.

Ringbone – bony growth on either or both sides of the pastern.

Sidebone - ossified (hardened, bone-like formations) lateral cartilage, protruding above and toward the rear quarter of the hoof head.

Splint – capsule enlargement usually found on the inside upper part of front cannon.

Wind puff - puffy swelling that occurs on either side of tendons above fetlock.

Sweeney – atrophy or decrease in size of a single muscle or group of muscles, usually found in shoulder or hip.

AAEP Lameness Grades

Lameness not perceptible under any circumstances.

1: Lameness is difficult to observe and is not consistently apparent, regardless of circumstances (e.g. under saddle, circling, inclines, hard surface, etc.).

2: Lameness is difficult to observe at a walk or when trotting in a straight line but consistently apparent under certain circumstances (e.g. weight-carrying, circling, inclines, hard surface, etc.).

3: Lameness is consistently observable at a trot under all circumstances.

4: Lameness is obvious at a walk.

5: Lameness produces minimal weight bearing in motion and/or at rest or a completely inability to move.

(adapted from New Mexico 4-H Horse Project, Dr. Jason Turner, Associate Professor, Extension Horse Specialist, New Mexico State University.)

GENERAL HEALTH

General

Cleanliness is very important. Clean the feeders and water containers at least weekly if possible. Bedding should be dry and clean, and manure should be removed daily. The stable area should be level and well drained.

Stabled horses should have proper ventilation. Fresh air is needed even in winter but avoid cold drafts. Urea in horse urine forms ammonia that can cause respiratory problems if the barn is not well ventilated. If you smell ammonia in your horse stable, better cleaning of the stall areas or increasing ventilation should be investigated. Keep stable temperature and atmosphere as consistent as possible, drastic changes in temperature can open animal up to sickness. Horses do not need to be kept in a heated barn, but if you have an older horse or if your animal is clipped for early season showing a blanket maybe required. Refer to CVMBS story on blanketing.

Evaluate your horse's health often. It's important to know your horses' normal habits, pulse, respiration rate, membrane color, etc. It also helps to become familiar with common diseases, parasites, injuries and health problems that horses may encounter.

You are in control of many factors that affect your horse's health. It's essential to follow these important steps:

- Maintain sanitized stables and feeding equipment
- Provide clean, good quality feed and water
- Provide protection from common diseases
- Use properly fitting equipment
- Eliminate hazards around stables and pastures
- Observe your horse daily for injuries or signs of disease
- Use your horse according to its conditioning and training

Proper treatment of diseases, injuries and parasites depends on two important factors: correct diagnosis and treatment. Your veterinarian knows what health and first-aid measures you can safely handle. He or she can teach you the proper procedures.

Vital Signs

What is normal? Closely observe your horse's eating habits, gaits, activities and attitudes to determine what is normal. Changes in these habits indicate a problem. Measure temperature, pulse, and respiration rate to determine if you notice changes and think your horse is ill. The two most important tools in managing your horse's health you can own are a thermometer and a stethoscope. Both do not have to be the most expensive ones, but an average priced stethoscope and thermometer will be valuable investments in the health of your horse. Purchasing these tools and learning to use them correctly will be worth the investment.

Temperature

Take the horse's temperature with a rectal thermometer. Lubricate the thermometer and shake the mercury below 95 degrees Fahrenheit before inserting into the rectum. Remember if you are using a mercury thermometer, tie a piece of string to the loop on the end of thermometer and a clip on the other end to attach to the tail, because if you don't the horse will pull the thermometer in if you leave it in without watching it. The new digital thermometers also work well and will give you a temperature in less than 45 seconds depending on the brand. The normal temperature of a horse can range from 98 degrees to 101 degrees, with an average of 100 degrees. A fever is classified as mild at 102 degrees and excessive at 106 degrees. Exercise, excitement and hot weather raise normal body temperature.

Respiration Rate

To measure the breathing or respiration rate, watch the flank and rib movements or nostrils with each breath. Count the number of these in-out movements in a minute or for 15 seconds and multiply by four. An adult horse at-rest breathing rate should range from 8 to 16 breaths per minute. The rate increases with exercise and elevated temperature. Younger and smaller horses have a more rapid respiratory rate.

Pulse

A horse's normal pulse rate averages 25-45 beats per minute. Lower rates are normal for larger, older horses at rest. Younger, smaller horses have a higher pulse rate. A yearling has a normal rate of 40 to 58 beats per minute.

The best way to take a horse's heart rate is to use a stethoscope place it on the left side of the animal about two inches behind the horse's elbow. If you do not have a stethoscope you can take the horse's pulse with your fingers and a watch. When taking a horse's pulse remember to not push too hard as you can shut off the blood flow and you will not feel any pulse. A horse's pulse can be felt in several (see figure 31).



1. The inner surface of the groove under the lower jaw is where the external maxillary artery is found. Usually the pulse is taken from this artery on the inside lower jaw. It is in front of the large, round jaw muscles and found by moving your fingers up and down on the inside and underside of the jaw bone. The artery feels like a flat, soft cord. By pressing the artery against the jaw bone, you can feel the pulse. As blood flows through the artery, it pulses against your finger. If you have trouble finding the artery, ask your veterinarian to help you.
2. The back edge of the lower jaw (the cheek), about four inches below the eye and behind the lower jaw is the location of the facial artery.
3. Under the tail, close to the body (medial coccygeal artery).
4. The point at which the heartbeat can be monitored with a stethoscope.
5. Inside the left elbow, up and forward, against the chest wall.
6. The inside of the foreleg (median artery).
7. Behind the carpus, or knee (digital artery).
8. Medial or lateral pastern (digital artery).

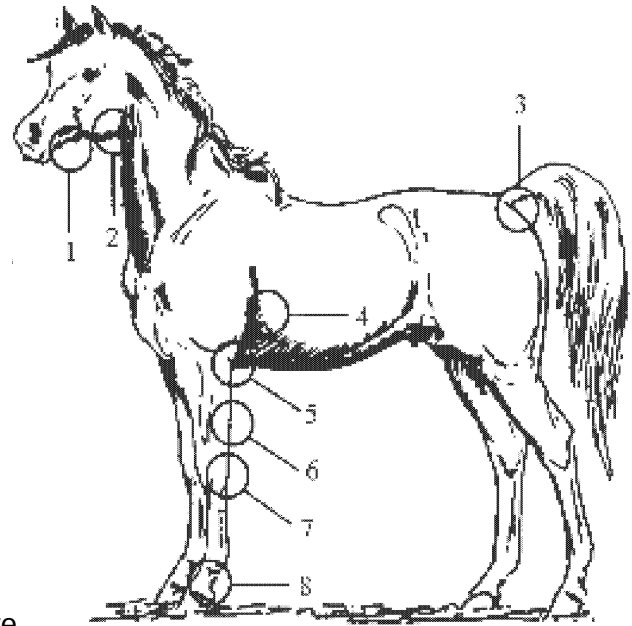


Figure 31. Points at which the horse's pulse can be felt and taken

Capillary Refill Time:

Capillary Refill Time (CRT) measures the time it takes for capillaries to refill with blood, indicating health of the circulatory system. It is an easy test to perform. Lift up the lips on the side of the mouth, then press on the mucous membrane of the lips or on the gums above or below the teeth to measure CRT. As you press on the membrane, you press blood out of the capillaries. When you remove your finger, the membrane appears pale. You can see the blood return as the membrane regains its pink color. It should take one to three seconds for the membrane to return to the color of the surrounding area. If it takes longer, your horse's circulation is poor, or your horse may be in shock or dehydrated. Call a veterinarian as soon as possible if you determine this in your animal. Use yourself as a comparison. Squeeze your thumb. Watch the color under your thumbnail. It will be pale pink when you release it, but the color will return rapidly.

FIRST AID

First aid is the immediate and temporary care given to a horse until a veterinarian arrives.

The goal of first aid is to stop the progression of the problem and to prevent the animal from injuring itself further. Horses are creatures of fright and flight. Their instinct is to bolt and run when they experience trauma, which can often cause more severe injuries.

First-aid includes keeping the horse calm and keeping you and the horse safe. If the horse is caught in barbed wire fence or a feeder, calm and soothe the horse until it can be freed. Horses can become very unpredictable when they are hurt, so take care that you do not become injured while helping the horse. If the horse begins to shake and quiver after an injury, cover it with a blanket; it may be going into shock or experiencing intense pain.

Bleeding

The average volume of blood in a 1,000-pound horse is 8 gallons (36 liters), about 6 to 10 percent of its body weight. A horse can tolerate losing up to 25 percent of its blood; about 2.25 to 2.75 gallons (9 to 11 liters). Because the horse is such a large animal, it can lose what looks like a lot of blood from an injury or laceration. However, blood loss is serious and should be controlled even if it may not be life-threatening.

To control a horse's bleeding, use a pressure bandage over the injury until a veterinarian arrives. Elastic bandages make good pressure bandages. If you do not have an elastic bandage available, "clean" towels, diapers, or clothing may be used instead. Injuries can be painful and stressful to the animal, take precautions to prevent you from being injured when applying a bandage. Many times, a serious laceration of the limbs includes severed nerves that are sensitive to touch. Apply the bandage tight enough to dramatically slow the bleeding. If the bandage is applied excessively tight, it could work as a tourniquet that cuts off the blood supply to the limb beyond the bandage. This could result in further complications as the injured limb needs blood circulation.

Before treating a laceration, remember that home remedies can contaminate the wound and make it more difficult for the veterinarian to treat. Do not use lanolin or petroleum-based products in or around a wound because they are not water-soluble and are very hard to remove from the wound. Clean any dirt and manure out of an injury with water and iodine solutions (not the strong tincture of iodine) or antibacterial scrubs. This is the only first aid you should administer without a veterinarian being present. A veterinarian should examine lacerations and suture if necessary.

Remember these things:

- Keep the horse calm, be safe!
- Clean the wound, if possible, with large amounts of water-based anti-bacterial solutions.
- Wrap the wound if it is an area that can be wrapped with clean or sterile bandages.
- Put the horse in a clean and safe area.
- Call your veterinarian or, if you can't leave your horse, have someone else call for you.

HEALTH PROBLEMS & DISEASES

Colic

Colic is not a disease in and of itself but is a common term for “belly ache”, but most often used for pain from the GI system. Colic is the number one killer of horses and can be a serious problem. Many cases are mild and can be treated through good veterinary care. Colic is not a disease in and of itself, but it is a symptom of disease. Call a veterinarian immediately when you suspect colic and begin emergency first aid.

Horses with colic have a faster heart rate, increased respiratory rate, and may have a higher body temperature than normal. The horse will sweat, become restless, paw the ground, try to roll, get up and down several times, bite at its sides, kick at its belly, hold its head in an unusual position, show a change in its manure, or fail to defecate. The pain may be caused by several intestinal problems such as an impacted or plugged intestine, sand in the cecum, increased activity of the intestine, inflammation of the intestinal membrane lining, blockage of blood supply to the intestine, twisting of the intestines, or stretched digestive tract due to gas or undigested feed.

Colic is caused by a variety of circumstances including abrupt change in feeding practices, overfeeding, parasites, poor feed quality, and dehydration, eating sand, poor dental care, a twisted intestine, pregnancy or many other situations.

To prevent further complications if your horse becomes colicky, keep the horse calm. Call a veterinarian immediately and keep the horse quiet to protect it from self-inflicted injury. You may need to walk the horse if it continually wants to roll or if it is kicking at its belly. Pulse rates over 50 to 60 beats per minute, slow capillary refill time and blue mucous membranes indicate the serious nature of the problem and are an emergency which will require prompt veterinary care. Treat every colic episode as a serious condition and get veterinary help.

The risk of colic can be reduced by good management, which includes:

- Providing adequate exercise.
- Feeding the appropriate diet, avoiding sudden changes in quantity or type of feed.
- Limiting the amount of grain and high starch/sugar type of feed.
- Dividing the concentrates into multiple feedings.
- Feeding on a set daily routine.
- Not feeding on the ground.
- Using a good parasite control program.
- Regular teeth care for your horse.
- Regular vaccination program.
- Reducing stress on your horse.
- Providing plenty of fresh, clean water.

Other health problems

An elevated or below-normal temperature, rapid pulse, lack of appetite, very loose or watery stools, coughing, listlessness, dull eyes, and rapid, labored respiration with flared nostrils are indications of a problem.

Dental Problems

Although tooth wear isn't a disease, tooth care helps keep your horse healthy. A horse eats fibrous materials that require a lot of chewing. This process causes the horse's grinding teeth (premolars and molars) to wear down. Because the upper teeth are set slightly wider than the lower teeth, sharp points develop on the outside of the upper teeth and on the inside of the lower teeth. These sharp points cause the horse to bite its cheeks and tongue as it chews food. It's harder for a horse with bad teeth to grind its food once it's taken in, which can lead to a blockage in the intestines or other signs of colic. Horses three to five years and older should be examined to see if they have these sharp points. If so, the teeth should be floated or smoothed down by a veterinarian using dental tools.

Signs of dental problems include:

- Swelling of the face or of the gum tissues
- Poor performance
- Not accepting the bit and bridle like normal
- Loss of body weight
- Dropping food when eating
- Large pieces of undigested forage in the manure
- Bad smell from the mouth
- Slobbering
- Head tilt or head tossing
- Tongue lolling
- Difficulty chewing
- Tail wringing
- Bucking

Gastric Ulcers

Horses' digestive tracts are designed to eat frequently and to consume grass or hay with only small amounts of grain. Because humans often feed horses more grain/concentrate than they need and often limit how many times per day the horse eats, digestive problems have developed. One of those problems is gastric ulcers. When a horse eats hay or grass, because it must be chewed more times and the content is higher in fiber, more saliva is produced which helps neutralize the stomach acids and prevent ulcers.

Other factors that make ulcers more common are:

- Stress resulting from activities such as training, showing, and transporting
- Change in feeding schedule--especially less frequent meals
- Lack of exercise
- Too much exercise

To prevent ulcers:

- Feed good quality hay that is not high in starch/sugar (you will only know if the feed is tested)-consult with your nutritionist, feed dealer, or your veterinarian
- Limit the grain /concentrate or feed in small amounts but more frequent feedings – add corn oil if your horse requires extra calories
- Arrange for times to exercise and be around other horses unless that is a stress factor for your horse
- Try to eliminate other stress factors

For treatment of ulcers, there is medication that can be prescribe by your veterinarian but in addition to medication many of the above prevention tips will be useful in the treatment of ulcers.

Recurrent Airway Obstruction (RAO) or Heaves:

Heaves is the common name but the medical term that is used for this condition is Recurrent Airway Obstruction Disease. It affects the lower part of the lungs and is hypersensitivity (allergy type of reaction) to dust and molds. It acts much like asthma in humans. The condition is made worse by feeding dusty or moldy hay. Symptoms of this disease relate to changes in the horse's lungs. Chronic coughing marks the beginning of the disease process. As changes in the lungs become more severe, the horse loses its stamina and requires more time to recover after exercise, nostrils flare and the horse suffers shortness of breath. In normal breathing when the diaphragm relaxes, the elasticity of the lungs forces air out. RAO destroys this elasticity.

The horse compensates by contracting its abdominal muscles to force abdominal organs toward the chest, pushing air out of the lungs. This looks as if the bottom of the abdomen is lifting up and occurs at the end of the normal shriveling of the chest during breathing. Because abdominal muscles become larger with this extra work, a line that defines them (heave line) develops along the bottom of the abdomen in chronic cases.

These changes in the lungs are permanent and only the symptoms can be treated. Heaves can be managed by feeding good quality, dust-free hay and providing good ventilation. Horses with heaves should be allowed outside as much as possible, providing access outside the barn/stable will help lessen the effects of the disease. Horses with this condition do have increased susceptibility to respiratory infections. Therefore, it is important to keep these horses up to date on vaccinations that prevent infections like influenza and rhinopneumonitis. If heaves become very severe, your veterinarian can prescribe drugs which will help the breathing of your horse.

Influenza (flu)

Influenza, a respiratory infection caused by a virus, more commonly affects younger horses. However, older horses can develop the disease if they are susceptible. The virus spreads rapidly between susceptible horses by aerosol (coughing) or direct contact (by infected nasal discharge). The flu is common among horses that are concentrated together-at sales, shows, and racetracks. Crowding and stress may make your horse more likely to get this disease. It may be prevented with semi-annual vaccinations. However, horses at high-risk should receive vaccinations every three to four months.

Horses usually develop signs of influenza two to 10 days after exposure. These signs include high fever, depression, shivering, inflamed throat, muscle stiffness and soreness, loss of appetite, increased pulse and respiratory rates, and fatigue.

A dry, hacking cough later develops into a moist cough. Nasal secretions will be clear and mucous-like in the early stages. Complete rest is necessary for up to 30 days after these signs occur. Horses that are worked when they have temperatures often develop a bronchopneumonia complication. Horses that don't develop complications usually recover in one to two weeks.

Rhinopneumonitis or Equine Herpes Virus

There are two distinct viruses associated with Rhinopneumonitis infection – equine herpesvirus type 1 (EHV-1) and equine herpesvirus type 4 (EHV-4). They cause two different disease conditions depending on the age, sex, and immune status of the individual.

According to the American Association of Equine Practitioners (AAEP) the following information is important:

Both viruses cause respiratory tract problems but EHV-1 may also cause abortion in pregnant mares, death in foals, and neurological disease. The neurological form of the disease is may develop as early as 24 hours after exposure and may not show respiratory signs.

Infected horses may exhibit the following:

- Fever and depression
- Loss of appetite
- Nasal discharge
- Cough
- More severe respiratory symptoms in younger horses
- Incoordination or stumbling
- Hind leg weakness
- Leaning on something
- Head tilted to one side
- Not able to get up
- Limp tail-not able to move it
- Urine dribbling-not able to hold urine in

(Note: if your horse shows any of the following signs call your veterinarian immediately)

Rhinopneumonitis is spread by aerosol and by direct contact with discharges, equipment tack, buckets, grooming tools-and drinking water. The virus may also be carried and transmitted by horses that show no signs of disease.

It is important to vaccinate young horses, those under stress, and horses that have frequent contact with other horses. The immunity from vaccination is short so young horses at higher risk need a booster every three to six months. Pregnant mares are vaccinated with a special vaccine to protect against EHV-1 form of Rhinopneumonitis; a regular "flu-rhino combo" vaccine will not protect mares against abortion. Mares are to be vaccinated at five, seven and nine months of their gestation.

Tetanus (lockjaw)

A neurotoxin produced by the bacteria *Clostridium tetani* causes tetanus and infects animals through deep puncture wounds from nails or splinters. The bacteria also can infect the navel of newborn foals. Use Tincture of Iodine or Betadine on the foal's navel to prevent tetanus. Vaccinating your horse every year prevents tetanus and booster vaccinations should be given when your horse is injured.

Tetany is the severe tightening of a muscle, muscle twitch or muscle cramp. Symptoms usually occur within one to two weeks after injury. Jaw muscles are some of the first to tighten and, since they are much stronger than muscles that open the mouth, the horse is unable to open its mouth. "Lockjaw" is the common name for tetanus.

Other symptoms include tightening of hind leg muscles, or the horse holds its tail up, ears erect, and the head and nose are high with its head extended. This tightening of muscles in the body also causes the horses to assume a sawhorse stance and it has trouble moving because all its muscles are tight or cramped.

The horse will also overreact to loud noises and fast movements, is unable to eat or drink, and experiences rapid breathing and heart rate, constipation, elevated temperature, and excessive sweating. More than 80% of the affected horses die.

Encephalomyelitis/Sleeping Sickness

There are different types of sleeping sickness, or equine encephalomyelitis, named for the different viruses that cause them: Eastern Equine Encephalomyelitis, Western Equine Encephalomyelitis, and Venezuelan Equine Encephalomyelitis. These diseases transmitted by mosquitoes are difficult to tell apart since they produce similar symptoms.

- **Eastern Equine Encephalomyelitis (EEE)**
EEE is a severe disease of horses and humans and is often fatal. It doesn't occur as frequently as western equine encephalomyelitis but is more serious. Symptoms in the horse include fever, loss of appetite, depression, sleeping sickness, circling, head pressing, blindness, intense itching, paralysis of face muscles, difficulty chewing and swallowing, weakness, incoordination, seizures, respiratory arrest, and death in up to 90 percent of the horses affected.
- **Western Equine Encephalomyelitis (WEE)**
WEE can be seen throughout North America. It is the mildest but most frequent of the three types of sleeping sickness. Symptoms develop several weeks after the horse is infected. They are like those of EEE and last for two weeks or more. Fifty percent of the affected horses die.
- **Venezuelan Equine Encephalomyelitis (VEE)**
VEE is found in Central and South America. There was an outbreak of VEE in the United States in the 1970s. However, it has not been seen in the US for many years. It causes high death rates and horses serve as a reservoir for viruses that infect humans. Vaccinations for VEE are not routinely used.

Eastern Equine Encephalomyelitis (EEE), WEE and VEE vaccinations can be combined with tetanus and influenza in one dose.

West Nile Virus

The following provides the latest information and recommendations of the American Association of Equine Practitioners (AAEP):

West Nile virus has been diagnosed in horses throughout the continental United States. This disease causes neurological signs, muscle tremors, hypersensitivity of the skin, loss of coordination, and failure to be able to stand.

The mosquito acts as the vector that transmits sleeping sickness or West Nile virus, after the insects have acquired the virus from birds and rodents. Humans are also susceptible when bitten by an infected mosquito, but horses and humans are dead-end hosts, meaning a horse or human cannot pass the disease on to the other.

Signs vary widely but result from inflammation of the brain and/or spinal cord. Early signs may include:

- Fever
- Depression
- Appetite loss
- Staggering when walking, progressing to being unable to walk

Vaccination for West Nile virus should be administered at least annually, and bi-annually in high-risk areas. The frequency of WNV vaccination is also dependent on the vaccine used. States with more persistent mosquito populations may require more aggressive vaccinations for sleeping sickness and WNV. The mortality rate of affected horses is 25-35%.

Rabies

Rabies is a zoonotic disease, which is a disease that is shared by and can spread between animals and humans. Caused by a virus, it is contained in the saliva of the rabid (infected) animal. Rabies is generally transmitted between animals by bite wounds.

The rabies virus resides in the U.S. in bats and carnivores such as skunks, raccoons, and foxes. Starting in 2007 a form of rabies found in skunks has become prevalent in Colorado especially Eastern counties and along the Front Range.

Clinical signs vary in the horse and may be subtle. Typically, symptoms appear in 2 to 6 weeks, but longer incubation times have been reported. Once the virus enters the body, it replicates and moves to the spinal cord and brain. From the brain the virus moves to the salivary glands where it replicates and is shed. At this point, the infected animal can expose other through its saliva.

Rabies should be suspected in all horses showing a sudden onset of neurological signs like paralysis, lameness and/or incoordination. Horses exposed with rabies may show other clinical signs that resemble other diseases such as depression with loss of appetite, low-grade fever, abdominal pain or colic (straining to urinate or defecate), head-pressing and circling, being unable to get up, increased sensitivity to touch, appearance of choke, swallowing problems and drooling odd behavioral changes, nervousness, irritability, convulsions or seizures. Sudden death has also been seen on occasion.

Rabies can only be confirmed by a laboratory test after death. An infected horse can expose owners, caretakers, veterinary personnel and many other people to rabies.

There is no known effective treatment of horses with rabies. Horses with clinical signs usually die within 5 to 7 days. **Once the clinical signs appear, it is imperative to limit exposure of the infected horse with humans and other animals on the farm.**

Rabies is a disease that is better prevented. Rabies exposure to humans and other animals is best prevented by vaccinating horses, livestock and pets and managing any animals exposed to rabies. The AAEP recommends rabies as a core vaccine to be given annually by a licensed veterinarian. Owners should keep documentation of vaccination. Otherwise an animal may be deemed “un-vaccinated” in a rabies exposure and be deemed a hazard to human health. Speak with your veterinarian about a vaccination schedule.

Strangles

Sometimes referred to as equine distemper, strangles is a very contagious disease that primarily affects the upper respiratory tract. Several strains of streptococcus bacteria cause the disease.

Symptoms develop two to six days after the horse is exposed to the bacteria. Symptoms include a high temperature (103 to 104 degrees), nasal discharge, depression, an increased respiratory rate and a dry cough. Lymph nodes in the throat are swollen and painful.

Because of pain in the throat area, the horse has trouble swallowing and loses its appetite. Pain also causes the horse to stand with its neck stretched and head down. Swelling can be seen where the head and neck join. Swollen lymph nodes can become abscessed (filled with creamy yellow pus) and break open. Sometimes the bacteria spread to other lymph nodes in the chest and abdomen, causing serious complications for the horse. Nasal discharge usually is yellow or white.

Direct contact between an infected horse and a susceptible one transmits the disease. Bacteria also can be transmitted on buckets, feeders, fences, clothing, shoes and waterers. Rely on your veterinarian for vaccination recommendations and treatment. The vaccine is available in both injectable and intranasal forms.

Laminitis (founder)

Laminitis means inflammation of laminae in the hoof of the horse. The white line in the hoof is the laminae, which is made up of sensitive tissues inside the hoof wall that keep it attached to the third phalanx, a bone inside the hoof (coffin bone). Structures under the back of the third phalanx hold the hoof up. With this inflammation, attachments break down. After the breakdown, the front tip of the bone rotates or falls onto the sole and causes intense pain. The horse tries to reduce the pain by walking with its feet out in front and moving in a manner to keep pressure off its toes. Laminitis most often affects the front feet but may affect all four feet.

Laminitis can be caused by:

- Overeating on grain or on certain forage/hay
- Eating lush grass
- Abrupt changes in feed
- Allowing horses to drink water before cooling down
- Infections
- Toxins released from the digestive tract from colic or high sugar/starch feeds•

- Stress
- Certain diseases, like Cushings disease
- Injuries to other legs putting added stress to other feet
- Trotting or running on hard surfaces causing concussion or trauma to the hoof and bone

If you think that your horse is suffering from laminitis or founder, it is very important to contact a veterinarian for immediate treatment; otherwise, it can develop into a chronic problem with many complications. Sometimes horses need to be euthanized, as the laminitis can be that severe.

A horse that has had laminitis may develop rough rings around the hoof wall. Horses with laminitis may be lame for the rest of their lives.

Insulin Resistance

This is an important disease to know about because it is associated with Laminitis or Founder. The term Equine Metabolic Syndrome is sometimes used to describe this problem in horses, especially if the horse also has laminitis.

These horses may have large fat deposits along the crest of the neck, at the base of the tail, and often carry too much body fat in general and generally are not exercised regularly.

The body normally produces insulin from the pancreas and it is secreted in response to high blood sugar (which occurs after eating). Insulin is used to help the cells use the sugar that is in the blood. In this condition, the affected horse has a high blood sugar level and a high insulin level, but the body's cells are not responding to the insulin. Therefore, the cells are not able to transport the sugar from the blood into the cells where it is needed. In other words, the body is not responding normally to insulin.

The reason for insulin resistance in laminitis is that the body's resistance to insulin may be connected to obesity and stress in the animal which increases cortisol levels that can trigger laminitis.

Insulin resistance is treated mainly by nutritional changes and exercise. The horse should not be on any grain or high-concentrate feed. The forage or grasses should be tested to check the levels of sugar, starch, and fructan (these are the highly absorbable carbohydrates in the diet). With high amounts of these sugars in the feed, sugars can be absorbed quickly into the blood stream and further raise the blood sugar. Also, some of these sugars (fructan) are readily fermentable in the lower digestive tract and excessive fermentation kills some of the normal bacteria; as these bacteria die, certain toxins from the bacteria are released and absorbed into the blood stream and travel to the hoof where the toxins cause laminitis.

Prevention is through proper diet and exercise. Some of these horses will need to be taken off pasture grass during spring and fall seasons and only fed hay.

Cushings Disease

Equine Cushing's disease is a disease of the pituitary gland that results in hormonal imbalances, causing a variety signs:

- A long, wavy hair coat that fails to shed according to normal seasonal patterns
- Excessive sweating
- Depression and poor athletic performance
- Chronic recurrent laminitis
- Infertility
- Weight loss and muscle shrinking especially in the back and withers

- Fat accumulations in the crest of the neck, tail head, sheath and above the eyes
- Drinking large volumes of water and excessive amounts of urine
- Delayed wound healing; and increased susceptibility to infections

This disease tends to occur in middle-aged and older horses over 20 years old when the disease is seen. Without treatment, the horse will get worse over time and many horses have to be put down due to laminitis, recurrent foot abscesses or complications related to bacterial infections. Treatment of Cushing's disease involves a combination of both specific medication to normalize the function of the pituitary gland and supportive care to help to prevent complications associated with the disease. Treatment will be life-long as there is no way to reverse the disease process. Early in the disease, medication may not be required and body clipping to remove the long hair coat for comfort in heat, controlling diet, and close attention to teeth, hooves and preventive care may be sufficient to provide good quality of life.

Since affected horses are often insulin resistant, sweet feed and other feedstuffs high in soluble carbohydrates should be avoided and should be high in fiber and fat. Feeds made for older horses are recommended, but those with high levels of sugar or molasses should be avoided unless needed to encourage the horse to eat.

In affected horses, the importance of early diagnosis and aggressive treatment of bacterial infections is a necessity. Medications and a variety of nutritional supplements and alternative therapies have been used in the management of equine Cushing's disease. Working with your veterinarian is essential to provide a horse with Cushing disease a good quality of life.

Vesicular stomatitis

Vesicular Stomatitis (VS) is a contagious disease that can affect horses, livestock, wildlife and even humans. The disease is caused by a virus, which although rarely life threatening. When vesicular stomatitis occurs in horses, blister-like lesions are found on the tongue, in the mouth, nose and lips. Lesions may also be found on the coronary bands, or on the belly. When VS is suspected, an exact diagnosis should be obtained by testing the blood for virus-specific antibodies. Testing should be done by your veterinarian to determine if the blisters are from something your horse ate, a drug that was used or if it is actually VS. The horse can develop the disease from 2 to 8 days after exposure to the disease.

A fever may develop initially as blisters form on the tongue, gums, or coronary bands. One of the most obvious clinical signs is drooling or frothing at the mouth. Weight loss can occur as a horse with mouth ulcers finds it too painful to eat. If lesions form around the coronary band, inflammation within the foot may result in lameness or laminitis. This disease can last from 2 weeks to two months before the sores are healed. If the sores are present, the horse can give it to another animal.

To treat a horse with vesicular stomatitis, feeding soft feeds to avoid causing pain when he eats. Consult your veterinarian for additional treatment that can be done while the healing of the sores continues.

Vesicular stomatitis occurs during the warm parts of the year, summer and fall. Insects such as biting flies and gnats may transmit the virus from one animal to another. Stable and houseflies also can transmit the disease, but that is less likely. The disease also seems to be passed from horse to horse by contact with saliva or fluid from ruptured blisters. Contact between animals, or contact with buckets, equipment, housing, trailers, feed, bedding or other items used by a horse with VS can help to spread the disease

To prevent the disease, practice the following suggestions:

- Healthy horses are less likely to get the disease so provide good nutrition, regular exercise, deworming and routine vaccinations.
- Isolate new horses for at least 21 days before introducing them into the herd or stable.
- Observe your horse closely and isolate any horse that shows signs of blisters.
- Implement an effective insect control program.
- Keep stabling areas clean and dry. Remove waste and eliminate potential insect breeding grounds (standing water, muddy areas).
- Use individual feeders and equipment for each horse.
- Clean and disinfect feed bunks, waterers, horse trailers and other equipment.

You can catch VS from infected horses. So, wear gloves and avoid contact with the blisters. Vesicular stomatitis in humans tends to cause flu-like symptoms such as headache, fever, muscle aches, and extreme fatigue. People rarely develop blisters in their mouth.

By working closely with your veterinarian, you can develop strategies to reduce the likelihood of a vesicular stomatitis outbreak, or to minimize the effects should one occur. Veterinarians and owners who suspect that an animal has vesicular stomatitis should immediately contact state or federal animal health authorities.

"Tying-Up Syndrome" or Polysaccharide Storage Myopathy (PSSM) or Exertional Rhabdomyolysis (ER)

This condition has come under different names and different people classify this condition in different ways, but these syndromes affect the horse's muscles. The horse muscles become extremely painful. You will see tight muscles especially around the lower back and hindquarters. The horse may breathe more rapidly, sweat, walk very "stilted," or even be lying down. Certain breeds may be more prone to the disease.

Controlling this condition in affected horses includes:

- Controlling stress for your particular horse-depending on how you use your horse
- Developing an exercise routine for your horse-you may have to not give a performance horse a day off but use a lighter workout on an off-day. This condition often is worse after a complete day of rest in a performance horse.
- Using a diet that is low in sugar and starch-these carbohydrates are readily digestible and high peaks of blood sugar will make this disease worse (so you may have to do some feed testing and work with an equine nutritionist/veterinarian).
- Other medications as suggested by your veterinarian

Equine Infectious Anemia

Equine Infectious Anemia (EIA), also known as swamp fever, is another viral disease that affect horses Symptoms include a recurring fever, noticeable depression, increasing weakness, loss of muscle and weight, swelling in legs and underside caused by fluid accumulation, and anemia (lower than normal number of red blood cells). A test known as the Coggins test identifies this disease.

Your horse's only protection against EIA is prevention. The following are important:

The pre-purchase examination should include an EIA test

- Test all horses annually if transported frequently
- Horses at greater risk should be tested more often
- Any horses entering stables and shows should be required to verify current negative Coggins certificates upon entering the premises. Quarantine new horses for 30-60 days and observe for signs

EIA has no specific treatments and cannot be prevented by vaccination. In many states, horse shows, and races require a negative Coggins test for the disease before the horses may enter the state or the grounds. Most states require that horses who test positive for this disease be kept in a permanent lifetime quarantine or be put to sleep (because they are a lifetime carrier of the virus and are a threat to the total horse population). Traveling with your horses on the interstate highways also requires a negative Coggins (EIA) test.

Hyperkalemic Periodic Paralysis

Some diseases are caused by genetics that can be passed on from parent to offspring. Hyperkalemic Periodic Paralysis is an inherited disease of quarter horses and other stock horses. This condition is characterized by seizure attacks of muscles, including muscle tremors, weakness or convulsions. Muscle fibers leak potassium into the horse's blood, making blood serum potassium levels increase. High serum potassium levels can cause cardiac arrest and death. Because the disease is genetic, there is no cure; however, diet or medication may prevent seizures. Genetic testing can be used to select breeding animals that are not carriers of the HyPP gene.

Equine Viral Arteritis (EVA):

EVA is a disease primarily of breeding horses. Infected mares will abort their foal, infected foals can die, and infected stallions can become carriers and transmitters of the virus. EVA is spread through the respiratory and reproductive secretions. There is a vaccination available; use would depend on your veterinarian's advice and the reproductive status of your horse.

Potomac Horse Fever

Potomac horse fever is caused by an organism, *Ehrlichia risticii*, and is transmitted by insect bites. Symptoms include mild depression, refusal to eat, mild temperature, colic and profuse diarrhea 24 to 48 hours after onset that lasts for up to 10 days. Laminitis develops in one of four horses stricken with the disease. Treatment of severe symptoms usually is not successful and the horse dies. Horses should be vaccinated in regions where the problem occurs most frequently.

Equine Protozoal Myeloencephalitis

EPM is a debilitating neurological disease caused by a protozoal organism (*Sarcocystis falcatula*) that settles in horses' spinal cords. Possibly up to 50% of horses have been exposed to EPM. Affected horses generally lose coordination of their hind legs; the disease affects a horse's balance and mobility. Horses get EPM by eating sporocyst-infected feed. *Sarcocystis falcatula* is carried by birds that are eaten by opossums, which shed the organism into horse feed, water, and pasture. Horses cannot transmit the disease to another animal. A test for EPM has been developed.

Equine Immunization Program (American Association of Equine Practitioners Guidelines)

Disease	Foals	Yearlings	Performance	Pleasure	Mares	Comments
West Nile Virus	1 st : 3-4 mo. 3 rd : As needed	Annual booster-prior to risk Semi-annual or more freq. in high risk areas	Annual booster prior to expected risk. Vaccinate semi-annually or more freq. depending on risk.	Annual booster prior to expected risk. Vaccinate semi-annually in high risk areas.		Annual booster is after primary series. In high risk areas booster as, local conditions dictate.
Tetanus Toxoid	2 doses, 4 wks apart	Annual	Annual	Annual	Annual, 4-6 weeks pre-partum	Booster at time of injury or surgery if +6 mo. from last
Encephalomyelitis WEE, EEE,VEE	1 st -3 mo. 2 nd -4 mo. 3 rd -5-6 mo.	Annual, Spring	Annual, Spring	Annual, Spring	Annual 4-6 wks, pre-partum	In high risk areas, booster every 6 mo. VEE only needed in high-risk areas.
Potomac Horse Fever	1 st - 5-6 mo. 2 nd -6-7 mo.	Semi-annual	Semi-annual	Semi-annual	Semi-annual with 1 dose 4-6 wks. pre-partum	Booster during May to June in high risk areas.
Influenza Inactivated Injectable	3 doses, start at 6 mo. -30 days apart	Every 3-4 mo.	Every 3-4 mo.	Annual w/added booster prior to likely exposure	At least semi-annual, w/1 boost 4 wks pre-partum	A series of 3 doses from primary vaccination of foals.
Intranasal live		Every 6 mo.	Every 6 mo.		Annual	
Rhino-pneumonitis EHV-1 EHV-4	1 st - 4 mo 2 nd -5 mo. 3 rd - 6 mo. Then at 3 mo. intervals	Booster every 3-4 mo. in high risk areas, otherwise annually	Booster every 3-4 mo. in high risk areas, otherwise annually	Optional Semi-annual or annually	Use inactivated vaccination: give at 5, 7, 9 mo. of gestation	Vacc. Mares prior to breeding and 4-6 wks pre-partum. Vacc. Stallions before season
Strangles Injectable	1 st -5 mo 2 nd 6 mo. 3 rd 7 mo 4 th 12 mo	Semi-annual	Optional, semi-annual when risk is high	Optional semi-annual when risk is high	Semi-annual with 1 dose of inactivated vaccine 4-6 wks pre-partum	Use when high risk conditions exist. Foals as early as 6 wks may receive the intranasal.
Intranasal	1 st - 6 mo. 2 nd 7 mo.					
Rabies	1 st - 3 mo. 2 nd - 12 mo Foals from vacc. mare has diff. schedule	Annual	Annual	Annual	Annual before breeding	Vaccinate only in high risk areas. Do not use modified live vaccines in horses.

PARASITES

A parasite is a living organism that spends all or part of its life in or on another organism and at that organism's expense.

Internal parasites

Internal parasite control is vital for your horse's health from birth to old age. In general, the horse ingests parasite larvae while grazing or feeding from the ground. The larvae migrate through the horse's internal systems. Larvae eventually settle in or near the intestines, where they rob the horse of nutrients. When mature, they lay eggs which pass out of the horse's system in its manure. New larvae crawl up grass blades to be eaten by other horses.

A horse infected with internal parasites often shows a dull and rough coat, weakness, stunted growth, weight loss, colic, diarrhea (sometimes bloody) or tail rubbing. Horses can die from heavy infections which cause internal damage. Regularly deworm your horse regardless of whether it looks like it has parasites or not or you have your veterinarian test your horse for parasites to determine if you need to deworm.

Horses kept in confined areas with several other horses maybe reinfested, especially if they feed off the ground. To reduce the effects of parasites, keep the area free from accumulated manure, do not feed on the ground and use deworming medications at frequent, regular intervals.

Ascarids (large roundworms), bots and strongyles (bloodworms) are the three most serious internal parasites.

In general, parasites interfere with normal growth and development, cause poor performance in working horses, lower horses' resistance to disease and transmit diseases.

Management and Treatment

Previous recommendation included a blanket and regular deworming program for all horses. However, deworming horses at regular intervals has led to widespread drug resistance in many parasite populations. Continuing this approach could lead to resistance of all parasites to all drugs available on the market.

Since each horse has its own individual need for parasite control, owners should request a fecal egg count (FEC) to determine each horse's need. A FEC requires collecting a fecal sample and calculating the number of parasite eggs present before deworming. Your veterinarian can provide this test or help you find a local laboratory that will. A FEC will detect the burden of small strongyles and ascarids.

Horses have a natural resistance to parasites that varies from horse to horse. A horse may be low shedder (less than 200 eggs per gram of feces), moderate shedder (200-500 eggs per gram), or higher shedder (500 or more eggs per gram). It is important to know your horse's status because about 20 percent of the horse population sheds 80 percent of the parasite eggs.

Treating high shedders:

FEC also help horse owners determine which drugs are working. A FEC taken prior to deworming can be compared to an FEC taken several weeks following deworming. This is called a fecal egg count reduction test. This test should show at least a 98 percent reduction in eggs counts with ivermectin and moxidectin.

Many compounds ("dewormers") are available to treat internal parasites. The most common is a paste or gel that is squirted into the horse's mouth. There are also powders fed with grain, pellets, and liquids given through a stomach tube. There are three drug classes available to fight parasites in horses: benzimidazoles (fenbendazole and oxbendazole), pyrimidines (pyrantol salts) and macrocyclic lactones (ivermectin, moxidectin, praziquantel). All of these have some resistance to come parasite populations. A FEC reductions test can help determine which drugs work best for your horses.

Regardless of the results of an FEC, horses should be dewormed at least once or twice a year usually in the Spring and Fall. This will help eradicate small strongyles, tapeworm and pinworms, the three most common parasites in adult horses. If bot eggs show up on a horse's legs, choose an effective dewormer (ivermectin and moxidectin) to give in the Fall following the first frost. Consult a veterinarian to develop a deworming program that will fit your horses.

Good management is the key to controlling internal parasites. Sanitation also plays an important role in preventing parasites. Other procedures that will reduce parasite problems:

- ❖ Rotation of pastures will help break the cycle of infestation.
- ❖ Using a harrow to break up clods of manure will expose the eggs and larvae to the sun and drying.
- ❖ Group horses according to age and do not overstock the number of horses per acre.
- ❖ Do not feed on the ground
- ❖ Clean up manure from corrals, paddocks, and barns.
- ❖ Work with your veterinarian to have a rotating plan for different de-worming agents.
- ❖ Controls fly populations.

Develop a parasite control program that fits your place and horses with the help of your veterinarian.

Botflies

Three species of botflies affect the horse. Adult botflies have no mouth parts and cannot feed on a host. However, the activity of adult female botflies laying eggs on a horse is bothersome to the animal. It is the size of a honeybee with a curved tail. The common botfly (*Gastrophilus intestinalis*) deposits its eggs on the horse's shoulder, mane, front legs and sides. The throatbotfly (*Gastrophilus nasalis*) lays eggs on hairs of the chin and bottom of the throat. The nose botfly (*Gastrophilus hemmorhoidalis*) lays eggs around the lips and nose. Eggs are yellowish, the size of a pinhead and cling to hair.

The horse's warm tongue licking the eggs makes the common botfly hatch. Larvae hide under the mucous membrane in the mouth for one month, come to the surface and are swallowed.

The other two types of botfly eggs hatch without stimulus. They burrow through the skin and under the mucous membrane, and then begin a life cycle like the common botfly. When the larvae enter the stomach, they attach themselves to the stomach lining and cause sores that can penetrate through the stomach wall. This can cause a severe abdominal infection that can kill the horse. In eight to eleven months, the larvae pass from the horse, burrow one inch into the soil, pupate and return to the surface as adult flies between June and August.

Remove botfly eggs by carefully scraping the horsehairs with a dull knife or piece of screen. Do this frequently to prevent eggs from hatching and larvae from infecting the horse.

Nematodes or Roundworms

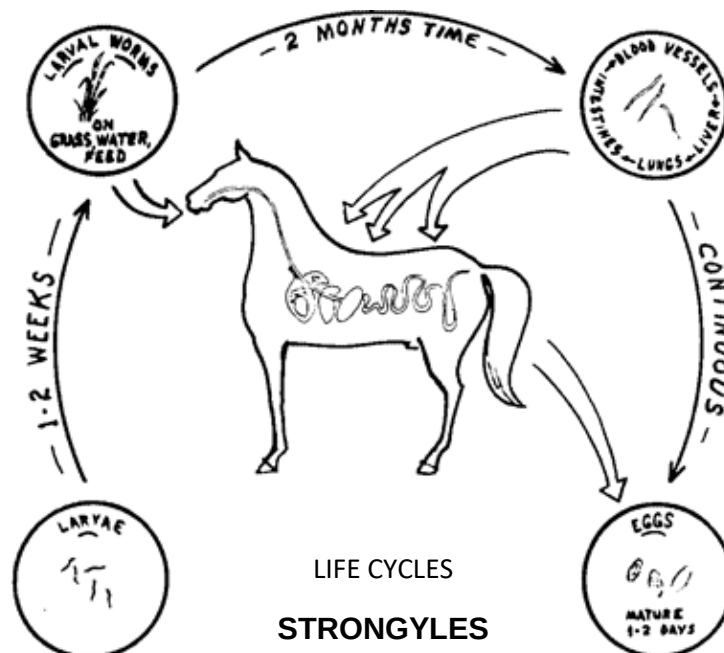
Nematodes are nonsegmented, cylinder shaped worms and are internal parasites. These are among the most serious parasites and include strongyles, ascarids, pinworms and habronema.

Some roundworm eggs are resistant to the environment and survive as long as 5 years. Advanced stages of larvae have 2 cuticles or coverings and can survive up to a year in the environment. Environmental factors that favor egg and larva survival are moderate temperatures, adequate moisture and shade. Environmental conditions that control internal parasites in horses are extreme temperatures, drying and sunlight. Favorable environmental factors for parasite survival also stimulate the infective-stage larva to move up blade of grass to gain access to a horse. Conditions are more favorable at dawn and dusk. Running horses on pasture during hot, sunlit days and removing them at dusk through dawn will decrease their exposure to larvae. Since it takes 3 days to a week for the infective-stage larvae to form, removal of fresh horse manure from the stall or paddock every 2 days will decrease exposure to parasites.

Strongyles

Three species of strongyles, commonly called bloodworms, are a major threat to the horse. They are the single-toothed strongyle (*Strongylus vulgaris*), toothless strongyle (*Strongylus edentatus*) and large strongyle (*Strongylus equinus*). All have the same life cycle until they are ingested and go into the large intestine or cecum. From there, life cycles differ.

Once a strongylus egg hatches, a larva is released. The larva feeds on organic debris and bacteria. It sheds its cuticle covering, grows slightly and molts. At this stage, the larva is infective. It develops into an adult worm when it returns to the digestive tract of the horse. Once in the digestive tract, the larva molts into an adult parasitic worm. Under good environmental conditions, the first stages take three days to a week. After the larva finds a host, it takes 21 to 30 days to become an adult worm.



Single-toothed Strongyle

The most serious of the three, it burrows through the intestine wall and gets into the arteries. It prefers the artery that supplies blood to the intestinal tract (anterior mesenteric artery). When they burrow into the arterial wall, the wall weakens so that the artery balloons, called an aneurysm. This weakened area can rupture and cause the horse to bleed to death. The larvae also cause body tissues to become inflamed, which can plug the artery, called a thrombus, or some of the material can break off and flow with the blood through the artery until it reaches a smaller artery that it plugs, called an embolus. The tissue not receiving blood dies-in this case part of the intestines and the area that dies is called an infarct. This causes severe colic. In most cases, the horse will die without surgery. Eventually larvae go back to the intestines and form adult worms. This process can take six months or longer.

Toothless Strongyle

The toothless strongyle leaves the intestines, goes to the liver, then to the tissue around the kidneys and back to the large intestine. This journey causes damage to the liver and signs of colic. Because the larvae can carry bacteria, they can cause serious infections in any of the tissues they travel through. They also can rupture blood vessels, especially around the kidneys, causing hemorrhaging so severe that the horse could die. Their trip can take as long as 300 days.

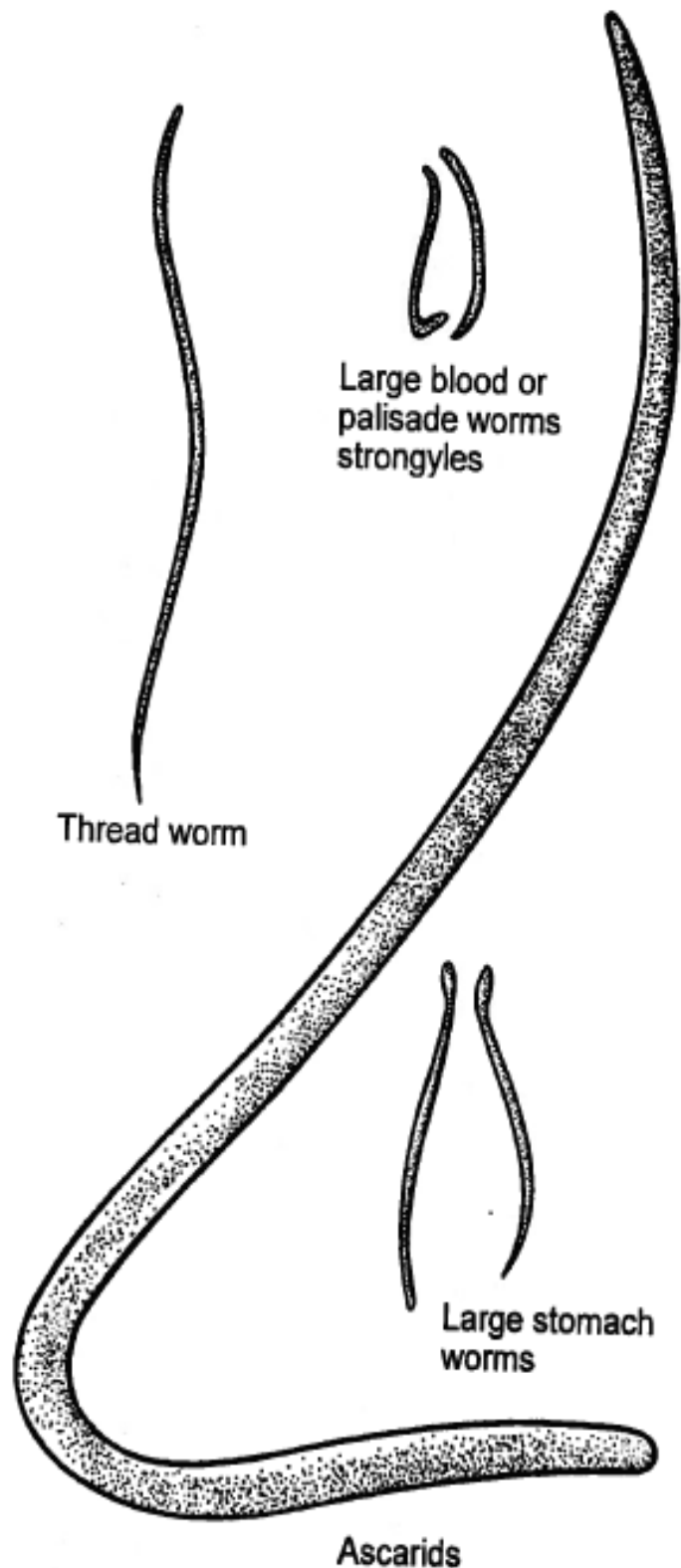


Figure 32. Strongyles (actual size)

Large Strongyle

The large strongyle leaves the large intestine and goes to the liver and pancreas. Its burrowing damages these organs and they can cause infections before returning to the large intestine. It takes about 240 days for the journey.

At least 12 species of small strongyles do not cause disease but lay eggs that look like those previously discussed. This complicates diagnosis of the serious strongyles when feces are examined for eggs.

Ascarid

Ascarids (*Parascaris Equorum*) are a type of roundworm, commonly called large roundworms, and are found primarily in young horses and are a serious threat if untreated.

In the life cycle of ascarids, females lay eggs in the horse's intestinal tract. Feces pass the eggs from the horse. Outside, larva develops within the egg. This is first-stage larva.

In the environment, second-stage larvae are in the infective stage (ready to infect the horse) and form while still in the egg. After the horse eats these eggs, they hatch in the small intestine, burrow through intestinal walls, get into veins and drain blood. They then travel to the liver, where they burrow around the liver tissue and drain blood from the liver before moving on to the lungs. Here they burrow through lung tissue until they get into the air passages. They molt to a worm and migrate into air passages, causing a tickling sensation. The horse coughs them up and swallows them, and they go back to the small intestines where they molt to adults. Migration takes one to two weeks. These large worms can cause blockages in the intestinal tract, bleeding, and secondary pneumonia in the lungs.

Pinworm

Pinworm females crawl out of the anus and lay eggs that stick to the skin around the anal opening. These drop off in about three days. The larvae develop inside the egg shell and are eaten by the horse. Then, the larva molts to the adult stages and passes through the large intestine and completes its life cycle. The activity of the female as it crawls in and out of the anal opening and the cementing substance that holds the eggs to the skin cause intense itching. The horse scratches itself by backing up to and rubbing its tail against a solid object like a fence post or the barn. This causes an unkempt, ragged appearance to the tail. The horse may lose weight and muscle because it spends more time scratching than eating.

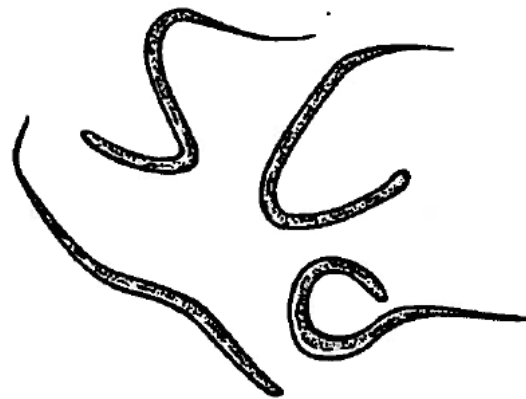


Figure 33. Pinworms (actual size)

Habronema

Habronema are stomach worms. Several species affect horses: however, horses rarely have heavy infestations. Fly larvae eat these eggs and, as the fly develops the larva develops. The horse eats infected dead flies in feed and water. One habronema species causes benign tumors in the stomach wall. Occasionally, infected flies release habronema larvae into skin wounds. These larvae do not become adults because they must be eaten by the horse to mature. They cause intense itching and open, oozing sores called Jack-sores or summer sores.

Others

Lungworms, tapeworms, liver flukes and other types of roundworms also infect horses but are rare.

External Parasites

While the previous parasites live and hurt the horse from within, flies, lice, mites and fungus live on the outside of the horse. If not managed, they can spread diseases and cause sores.

Management

Control fly population by frequently cleaning up manure from corrals, paddocks and barns. Composting manure will kill off fly larvae. Using a harrow to break up clods of manure will expose larvae to sun and drying. Also consider purchasing fly predators that lay their eggs in fly pupae then kill the developing fly larvae.

Support your horse's natural fly protection with the following:

- Keeping manes, forelocks and tail tangle free and long
- Avoid clipping hairs on the ears, eyes, muzzle and fetlock
- Allow horses space to roll in dirt and mud
- Buddy friendly horses up when and where safe

Provide additional fly protection with fly masks, sheets and boots. Fan can also keep flies from landing and biting along with fly repellent and spot on treatments.

Avoid sharing tack and grooming tools between horses especially those that have been or may be exposed to a fungus, lice or mites.

Consult with your veterinarian on treatment options for fly disease, lice, mites and fungus.

Flies

Many flies' cause problems in horses. Not only do they irritate the horse, they also transmit diseases.

- Stable flies suck blood from horses and other animals. The female lays its eggs in manure, urine and straw. This fly can carry the internal parasite larvae of *Habronema*, which cause summer sores. Cleaning destroys fly breeding sites.
- House flies do not suck blood but can transmit many serious diseases including the *Habronema* larvae. This fly lays its eggs in manure and straw.
- Face flies irritate the eyes. The fly is quite similar to the house fly.
- The horse fly is a large, black fly. Its bite is painful and may leave a bleeding wound. The deer fly is smaller and lighter in color with dark bands across its wings. Both flies can transmit diseases to horses. Larvae form from eggs deposited in muddy, wet areas. They burrow into the mud, emerging as adult flies 10 to 11 months later.
- Decaying and dead tissue attracts blow flies that deposit eggs in infected wounds. Their eggs develop into fly larvae called maggots. Keep wounds clean and uninfected along with using fly repellents around injuries to prevent blow-fly maggots.
- *Wohlfarthia* fly larvae penetrate skin and form abscess-like bumps containing the larvae. Remove maggots before the condition improves.

Mites

Three types of mites (mange or scabies) parasitize horses. They produce a condition like lice that cause large areas of skin to become bald, reddened and inflamed. Intense itching causes the horse to rub or scratch the infected areas and makes the injury to the skin worse. Mites are small (1/40 inch) and can't be seen without a microscope. Because they burrow into the skin, scrape some skin layers off and examine with a magnifying lens or a microscope to see mites.

Horse lice

Horse lice are uncommon but can become a problem. Two primary kinds of lice parasitize the horse: a chafing louse and a sucking louse. Both cause intense itching so that the horse rubs against solid objects and bites or gnaws at affected areas. As a result, large areas on the neck, shoulders, flanks and hips lose hair and become red and inflamed. These symptoms are worse in the winter and early spring when lice populations peak. Adult lice are about one tenth of an inch long, chestnut brown in color and clearly visible. Their eggs (nits) appear as whitish, small structures attached to fine hairs on the horse's body.

Fungi or Ringworm

Fungi also parasitize the skin and produce a condition called ringworm. It is not caused by a worm, but the sores are caused by the fungi, which appear ring-shaped with reddened patches covered with scabs. A better name for fungal infections of the skin is dermatomycosis.

These sores can be small to fairly large. They are hairless and inflamed with crusts. The fungi can be highly contagious, not only to other horses but also to humans. Use care when handling horses with this problem. The fungi can be transmitted on infected tack and brushes to uninfected areas and to different horses.

INTRO TO TRAINING

Good, consistent training is essential for your 4-H horse project. Every time you handle your horse, you train it and reinforce its previous experiences. All 4-H horse-project members should take lessons, attend clinics and carefully observe other horse owners. To develop into a competent horseman requires a dedicated and concerted effort.

Training methods vary with the trainer and the individual horse. A good trainer knows many methods and when to use them. Do not attempt to handle and train a foal or yearling until you are old enough, large enough and have the maturity and experience to properly manage all situations.

The secret is to make what you want the horse to do easy, while at the same time making undesirable behavior difficult. The horse learns good behavior and responds to cues through repetition. Some learn faster than others, but you must know what you want and ask for it in the same way each time. Rewarding by stopping a cue at the correct moment is as important as giving the correct cue. Be patient and remember one of your best aids is your voice. Talk to your horse with a soft, reassuring tone. Don't confuse your horse by asking too much too soon. Start out slow and be consistent with your training and commands.

Separate training into two parts: ground and saddle training. This manual covers basic ground training and recommends 4-H members seek instruction from experienced horse trainers. Saddle training requires experience and knowledge beyond the beginner or intermediate 4-H skill level.

An untrained or improperly trained horse is a nuisance and can be dangerous. The cute little tricks a foal learns will soon become bad habits when the foal grows up. Be firm about what you want it to do. Use discipline when needed, but never be harsh or cruel.

A horse taught to lead properly will move with you in any direction and at any speed. It will keep its head about even with your shoulder, or slightly in front, so you are about halfway between its head and shoulder. A horse should not crowd you or stay far away but keep a moderate distance from you and work on a loose lead line. When you wish to stop, apply a slight resistance on the lead rope. The horse should stop when it feels this resistance. When it stops, it should stand straight and quietly, again on a loose lead. These points are important for correct halter showing.

Round Penning/Lunging

Many trainers use a lunge line for both training and conditioning horses. You will find a lunge line useful, especially for early training of young horses and exercising older horses. With the round pen, 4-H members can learn to use body position to cue the horse without the lunge line, and then advance to the lunge line. Standing in the middle of the round pen, to push a horse forward, position yourself at the hip and use a lunge whip to send your horse forward (never get close enough to get kicked); step in front to stop motion and reverse direction. Use your voice to tell your horse what you want: walk (one cluck), trot (two to three clucks), lope (kiss), whoa (stop), back, reverse, and stay (ground tying).

A lunge line may be a light nylon or cotton rope at least 25 feet long. Fasten one end to a well-fitted halter. The rest of the lunge line is held in the hand. Stand in a small area and drive the horse in a circle around you. Walk forward in a small circle as your horse moves in a larger circle. Keep the lunge line loose, but not dangling. A tight lunge line can spoil a natural gait. Do not attempt to use small diameter ropes since they do not coil properly and can tangle. This is dangerous. A round pen is most effective for this exercise. If one is not available, use the corner of a pen or arena.

It takes patience to teach a horse to work on a lunge line. Up to this time, your horse was trained to walk by your shoulder. Start to train your horse to circle by teaching it to walk in a small circle around you. As the horse learns and responds, increase the size of the circle by increasing the amount of line you let out. A long, light whip may be used as an extension of your hand to make your horse move out, but never strike hard. The snap of the whip behind the horse's fetlock, or a touch of the whip or light flick on its hindquarters will give all the signal needed. Soon, you may not need the whip. Figure 34 shows your position to keep the horse moving around you in a circle. It is possible to train your horse to stop when you step forward from this position.

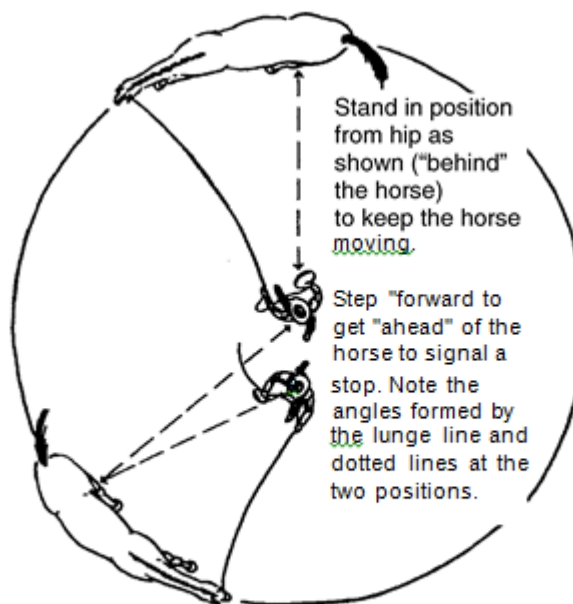


Figure 34. Lunge line or ground training

After your horse learns to circle freely at a walk and stop when you step forward and say "whoa," you can begin training it to trot and canter slowly. Always circle both directions equally so your horse can develop muscles and skill to work in both directions of the circle. This is an excellent way for your horse to learn and use the correct leads at the canter and develop its natural balance and grace without the weight of a rider. Do not let your horse canter or lope in the incorrect lead or "play" on the lunge line.

Do not work the horse at excessive speeds for a long time in small circles. This can cause stress and lameness in your horse's legs and a tight circle is hard on a young horse's joints. Keep the circle large.

Always use the same voice commands. Your horse will soon respond to these words.

Use a lunge line for regular exercise and training periods. Also, this is a good way to exercise your horse at a show. Train both young and older horses to respond to the lunge line. In addition to lunging, you can ground-drive your horse. You should have adult supervision when ground driving. Take care to not get tangled in the lines. Ground driving prepares a young horse for direct reining when put under saddle. Only use a lunge line in a round pen or enclosed area.

You'll find that it is fun to train and work your horse from the ground and you'll see a difference in the way your horse responds when you ride.

SHOWMANSHIP

The presentation of your horse to a judge is called "showmanship" and this presentation follows a pattern. A pattern is a written description of a group of maneuvers that the judge wishes to see and how the judge scores you on your skill in performing this pattern. A single maneuver is known as walk, or trot, or back, or pivot. A typical pattern for showmanship is to lead, walk, trot, back, set up or pivot the horse, in any combination. See the *Colorado 4-H Horse Rulebook* for suggested patterns, rules, and explanation of scoring.

Presentation of the horse has two parts. Part one is the appearance of the exhibitor and condition and grooming of the horse. The exhibitor should be dressed in clean, fitted clothes, with polished boots and a brushed hat. The exhibitor's hair should be neatly arranged away from the face and the back number should be clearly visible. The horse is required to be clean and brushed, with a combed mane and tail. Hair that has been clipped or trimmed should have a neat and tidy appearance. The halter and lead should fit well, be clean and in good repair. The lead may have an appropriate length of chain for size of horse, which may be carefully used under the jaw. (See figure 35)



Figure 35. Note the clean, well-fitted horse and competitor on the left.

See the following table for appropriate showmanship tack and attire.

Tack	Attire
Western Halter-plain leather or show type, with or without silver (silver not to count over clean plain leather halter).	Western hat, or helmet, long sleeved shirt, belt, long pants, western boots Optional: Jacket, blazer, tie, gloves, crop (if appropriate to breed shown)
English Hunter Style-plain leather halter or hunt bridle with reins safely draped over the horse's withers (additional leather lead may be added when using a hunt bridle and is attached to the bit or to the cavesson (noseband). If using the reins to lead, the buckle must be undone.	Helmet, hunt coat, hunt style show shirt with collar (girls) Or Helmet, hunt coat, hunt style show shirt with collar (girls), long sleeved shirt and tie (boys) jodhpurs, belt, jodhpur knee straps (garters), paddock boots (usually worn by riders 10 & under) Or Long sleeved shirt, blazer, khaki pants, leather shoes or boots Optional: gloves, hunt crop (if appropriate to breed shown)
English Double Bridle	Derby, saddle suit, long sleeved shirt, vest, tie, belt, paddock or jodhpur boots Optional: gloves, whip
English –Dressage or Show Hack Dressage bridle or plain leather halter	Helmet, black dressage coat or shadbelly (dark blue or black), long sleeved shirt, stock tie, white breeches, belt, hunt boots, Optional: gloves, dressage whip
Arabian Halter	Long sleeved top, long pants, leather shoes or boots Optional: hat, gloves, vest or jacket, tie, whip

The second part of presentation is the actual performing of the pattern. The exhibitor should display confidence and poise when showing. The horse needs to be responsive to the exhibitor's cues when performing the pattern.

In the Show Ring

Be on time when the class is called. If an individual pattern is used, the show management will normally post the pattern or give exhibitors a copy of the pattern. If no pattern is posted, enter the ring at the direction of the ring steward and watch the ring steward for instructions on where to go. Remember, even though the ring officials may be checking entries, the judge may be evaluating the contestants as they come in, so stay alert and continue to show your horse. Keep your concentration on your horse and the judge during the entire class and until the results are announced.

When instructed to line up, enter the line from the rear in the position indicated. Line up evenly with the others and set up your horse. Set your horse up as promptly as possible, and then watch the judge. Adjust to the proper side of the horse from the judge's position in relation to your horse. Do not crowd the other horses. Allow room between your horse and those on either side. When the class is lined up or leading head to tail, do not crowd the horse in front of you. Leave one horse length between horses. The horse should set up quickly, stand squarely and move forward or backward freely. Pose the horse according to your breed standards.

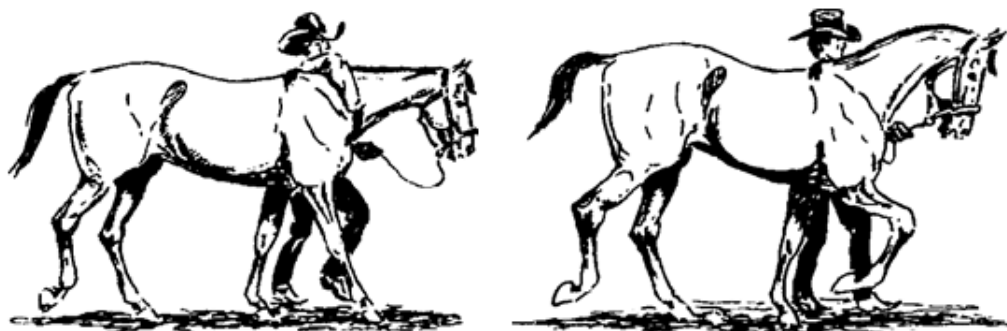


Figure 36. Be in control of your horse, hold the lead in your right hand with the excess lead neatly coiled in the left hand. Lead from the near (left) side. Note how the exhibitor on the left is not in control and the exhibitor on the right is clinching too tightly on the horse's head.

Training

There is never a substitute for training. No shiny halter, new shirt or colorful hat will make you as competitive as the person who has consistently schooled his or her horse.

Training does not describe any particular way of teaching. As all horses think and act individually, training methods need to suit the individual's ability. A training method is generally acceptable, if safety rules and humane treatment of the horse are practiced. See Basic Handling & Safety.

Three basic training rules

1. Patience
2. Consistency
3. Practice

Train at home until the signals you give are understood by the horse. Every time you lead your horse, to and from the barn, practice stopping, setting up and standing.

Note the safe zone areas in figure 37. These are the safe areas for someone who handles a strange or unschooled horse. When using the safe areas, you are out of the direct line of a sudden lunge, a strike from the front legs, or a kick from the back legs. Since a horse uses its head and neck to balance its body, the safe areas are the positions where maximum control can be exerted by pulling the horse's head to the side. This forces the horse off balance, in hopes of preventing further poor or dangerous behavior.

Halter showing and showmanship customs today, especially in showmanship classes, encourage the exhibitor to move to either side of the horse. This is safe only if the horse is properly trained before entering the show ring. A horse acts independently on each side; therefore, you must train the horse to lead, stand and show from each side. Always handle a strange or untrained horse from the near (left) side since most of horses are started and handled from this side.

As a trainer, give your horse the chance to do the work correctly. If you do not work with patience and consistency, the horse will be confused. This often leads to a cranky, stubborn horse. Practice makes you confident and your horse trustworthy.

To begin training for showmanship, your horse must do two things: lead willingly and stand quietly.

The most important part of any showmanship pattern is the set up for inspection. The set-up is a posed position of the horse for inspection by the judge. To achieve this pose, the exhibitor must teach the horse to stand squarely on each leg and stay posed until asked to change.

Figure 37. The shaded areas indicate safe zones for showing a horse from either side. Note the danger zone directly in front of the horse. Stand toward the front, not in the danger zone, and out of the direct line of action of a strike or lunge. It is permissible to cross the danger zone to get from one side of your horse to the other. Remaining in the danger zone is considered a fault. Use positions within the safe zones where both the horse and the judge can be observed. Teach the horse to back with the handler in the safe zone and not in the danger zone.

Bring your horse into the set up with the foot fall of the right hind foot. When you bring your horse from a walk to halt, the right hind becomes the basis of your set up. Do not move that foot. Next is the placement of the left hind foot. Setting the hind feet generally is the most difficult chore in the beginning of training.

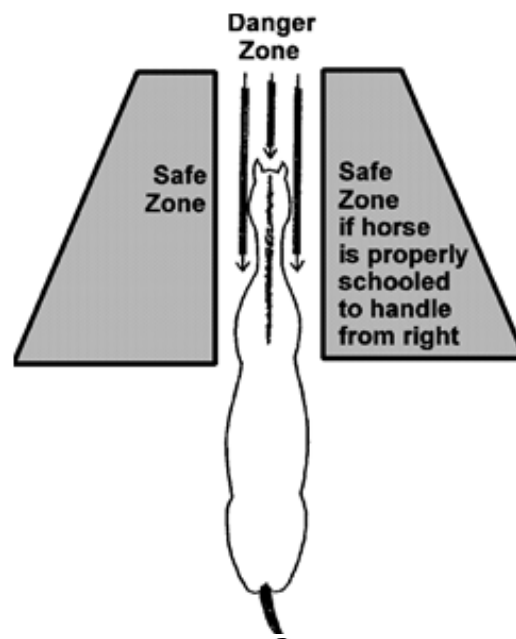


Figure 37. Safe Zone

Work only with the hind feet until you get a response. Use of a short whip or prod to touch the hind foot, this will help the horse to move its foot more readily, at the same time pulling forward or pushing back on the lead shank. Do not strike the horse's foot with the whip. Use it as an extension of your hand to signal the horse by touching the foot you wish to move. The desired response is movement of the foot or a shift in weight when you pull or push on the lead shank. This beginning movement probably will not be correct in its placement but once your horse understands to move a foot on cue, keep asking the horse to move his foot until the horse places it correctly or anywhere you wish it to be. Once the horse moves, relax the lead. This is his reward. Horses move their feet in a diagonal pattern: Right hind/left front or left hind/right front. As horses become well-trained, they will move each foot independently.

The front feet are treated a little differently. The foot most out of position, or not square, is moved first. Moving the front feet is generally done with side to side motion of the lead, with the lead held under the chin. Again, when the foot moves, release the pressure. With patience, the horse will become sensitive to any movement of the lead shank. In time, a slight push or pull on the lead will cause the horse to move a foot into the desired position. Eventually, the horse will anticipate your cues and stand correctly. Remember to always point your toes toward your horse's opposite front foot, when setting up.

Finally, after all the training and practice, it is time to meet the judge and perform the pattern. Two systems are acceptable. The exhibitor can choose to use either the half or the quarter system. Breed standards and the size of the exhibitor may dictate which system is used. The changing of the position of the handler is to allow the judge an unobstructed view of the horse to evaluate conformation, fitness and soundness. To keep the judge's view clear, the exhibitor must move from one side of the horse to the other. The showman chooses his side depending on the position of the judge. Currently, the quarter system is preferred by most exhibitors and judges. The following examples of the quarter system will explain the movements.

The Quarter System

The four quarters can be visualized by an imaginary line drawn down the center of the horse's body extending from front and rear to divide the horse into left and right sides. Another line drawn across the horse at the base of the withers, extending out from both sides at right angles to the first line, divides the horse front and rear. This is shown by the dotted lines in figures 38 to 41. Visualize the judge moving in a clockwise direction around the horse or around the class of horses, as you move from figures 38 through figure 41. The exhibitor should stand angled toward the horse in a position between the horse's muzzle and eye, toes pointing toward the horse's opposite front foot, holding the lead with enough slack to allow movement under the chin, as the handler changes position from one side of the horse to the other, as the judge's position changes.

Hold the lead between the thumb and forefinger of the right hand, near the noseband of the halter, but not touching the horse. The excess lead is held in the left hand in a large loop or a figure 8. Relax your arms and slightly bend the elbows. Do not change hands on lead shank; always work with your right hand, holding the excess lead in the left hand.

Backing

When backing your horse, turn to face the horse, angled slightly towards the rear of the horse and then ask the horse to back with minimal contact on the lead shank. Do not stand directly in front of the horse while backing, as you would then be in the danger zone. Pulling the horse left or right will make the horse's hip shift one way or the other and make him back crooked. Try keeping the horse straight from nose to tail when backing a line. Slightly different positions are often required to allow for the height of the exhibitor.

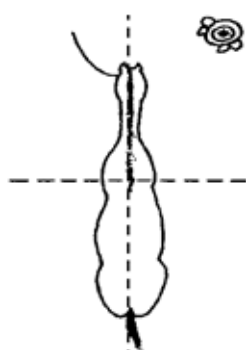


Figure 38. First, the exhibitor is in the basic position –safe zone at the horse's left and the judge at the horse's right front or in the right front quarter.

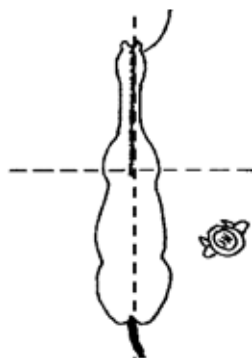


Figure 39. As the judge moves across the imaginary line to the right rear quarter, the exhibitor steps across to the horse's right side.

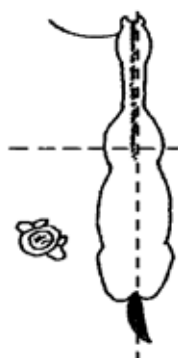


Figure 40. The judge moves into the left rear quarter, and the exhibitor steps back to the left to be on the same side as the judge.

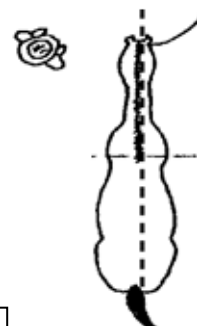


Figure 41. As the judge moves to the left front, the exhibitor steps back to the right to avoid blocking the judge's view.

When changing sides, remember to start by beginning to cross with your foot closest to the horse as first step, taking a second step to further cross over and a third step, to bring your feet together. Take as many steps as necessary to accomplish a smooth cross over. Steps progress from a point towards the front of the nose, across the danger zone, to the opposite side, bringing your feet together when reaching the appropriate spot to present your horse to the judge. Remember, your toes face the horse's opposite front foot. Stay out from the horse far enough to see the judge as he crosses the shoulder line. Always be where you can have eye contact with the judge.

Trot Off

To demonstrate your horse's natural movement and soundness, the judge often asks you to trot your horse. If your horse does not trot beside you, he must be taught to do so. Begin teaching the trot from the walk. Your body position at the walk and trot should be slightly behind or at the horse's throatlatch. Your right hand should be slightly below or at the level of the noseband of the halter.

Always start off with your right leg and right hand pushing forward when initiating the walk or trot. If you start off with your left leg your horse will be behind you and you'll be dragging him. The horse should be watching your shoulder. As you lean forward, it will alert your horse to move forward. Once you and your horse can walk together in this position without any pulling on the lead shank, pick up the pace of the walk.

Vary your speed at the walk to test your training. The horse should adjust his speed to match yours. If it does not, continue practicing the walk. Practice stopping and starting off with your horse along the fence to prevent it from swinging its hips off to the right. Remember to take two steps after saying, "Whoa," because it takes a couple of seconds to go from your horse's ears to its feet. Your horse should stop straight. This requires practice. Don't pull the horse toward yourself when stopping. When you ask for the trot, ask with the same sound or verbal cue you use when riding or lunging. Walk briskly and cue the horse to trot just as you begin to trot yourself. If the horse does not trot, use a whip, held in your left hand, to encourage the horse's forward motion, tapping at the hip or hocks. You may wish to ask a friend or an adult to encourage your horse into the trot from behind the horse (be sure to keep a safe distance behind the horse to avoid being kicked). Continue this routine until the horse learns to trot off promptly when requested to do so.

Pivots

Patterns quite often require a pivot or turn on the haunches. The pivot usually is described as a quarter or half turn (90 or 180 degree turns) and sometimes a full, or 360-degree, turn is asked for. When turning less than 90 degrees, the turn can be to the left. However, the turn is always to the right or away from you when it is more than a quarter turn. To begin the training, start with the right hind foot. This is called the pivot foot. Position your right hand slightly below or at the level of the noseband of the halter, as your body stays parallel to the horse's head. Your first step in initiating the pivot is with your left leg. Teach your horse to get off of you by holding the lead in the left hand while bumping the shoulder with your right hand and stepping toward the horse to move the shoulder and rib cage to the right while maintaining the pivot foot. Keep the horse's balance going forward to prevent them from backing through the pivot and coming off the pivot foot.

The shoulder and rib cage must move before the head. If you turn the head or push too hard with your left hand, the horse will only turn his head or bend in the neck. To help move the rib cage and shoulders, cautiously use a crop or prod. Try to keep the horse as straight as possible. This movement is difficult for the untrained horse. To begin the pivot, the horse must step around with his front legs, crossing the left foot over the right, while keeping its right hind foot, the pivot foot, in place. Horses often take a step back or step out to the right with the pivot foot. If he does, simply pull the horse back around to the start position and begin again. The pivot is a forward maneuver. When you begin your training, ask only for one step and reward the horse by stopping and giving the horse a pat. Training the pivot is a challenge, so one small step done correctly is great progress.

You may need the help of a friend or an adult to keep track of the pivot foot's position while you keep the shoulder moving. In that way, you can stay in the proper position at the head of the horse. Give the whip or crop to your helper and they can move the shoulder over while you keep the horse from moving forward. If you can see the pivot foot, you're in the correct position. You should not be in front of the horse, but rather at its side, parallel to the horse's neck and head. Increase the pivot steps from one, to two, to three and so on until you and your horse can accomplish a 360 degree turn with ease.

In Closing

Remember that showmanship is a safety and courtesy class and, when done properly, it is a vehicle to show everyone the teamwork you have with your horse. Practice whenever you have a chance. Practice when the farrier and vet work on your horse and whenever you lead your horse to or from the pasture or stall. Eventually, your horse will lead at whatever pace you choose, set up automatically and your showmanship presentation will be excellent!

WESTERN TACK & EQUIPMENT

Good equipment is a necessity. Equipment should be well made and fit both you and your horse. Fancy equipment is not necessary for your 4-H project.

You will need a saddle, saddle pad or blanket, bridle with a good bit, halter and lead rope for your 4-H project. Other equipment, such as chaps, splint boots, spurs or lariat may be needed, depending on the type of riding you do. Spurs are only to be used as aids. Until you learn proper use of leg aids spurs should not be used.

Bridle

The bridle consists of three parts: the headstall, bit and reins. Western headstalls usually come in three styles: browband, split-ear and sliding ear. Western reins come in three varieties: split, romal and mecate. The headstall should be of strong, narrow leather. The bit should be as light and mild as possible, while still allowing you to maintain control of your horse. Too often severe bits are used as a substitute for good training. Do everything possible to keep your horse's mouth soft and responsive.

The bit is used to communicate with the horse, not control it. Western bits fall into three main categories: snaffle, curb and spade. A snaffle bit is a non-leverage bit while curb is a leverage bit and the spade bit is a signal bit. The bit should fit the width of the horse's mouth and be properly adjusted to the horse's bar space, chin groove, lips and tongue. Snaffle bits usually are correctly adjusted if they make one or two wrinkles in the comers of the horse's lips. Curb bits are usually fitted with one wrinkle or just moderate contact with the comers of the horse's mouth. Consult with your leader or riding instructor to learn more about proper biting.

The *hackamore* is a bridle without a bit. Hackamores come in two styles, bosal and mechanical. A bosal is made of braided leather or rawhide and can be a valuable training tool. Mechanical hackamores are a leverage device that creates pressure on the bridge of the nose and on the chin. Mechanical hackamores are not acceptable in western performance classes but often are used in timed events and trail riding.

Curb straps are necessary on all leverage bits and mechanical hackamores. Some curb straps are made of leather and some are flat chain. All curb straps must be at least 1/2- inch wide to lay flat against the horse's chin. Adjust the curb strap so it is tight when the bit shanks are a 45- to 50- degree angle to the mouth.

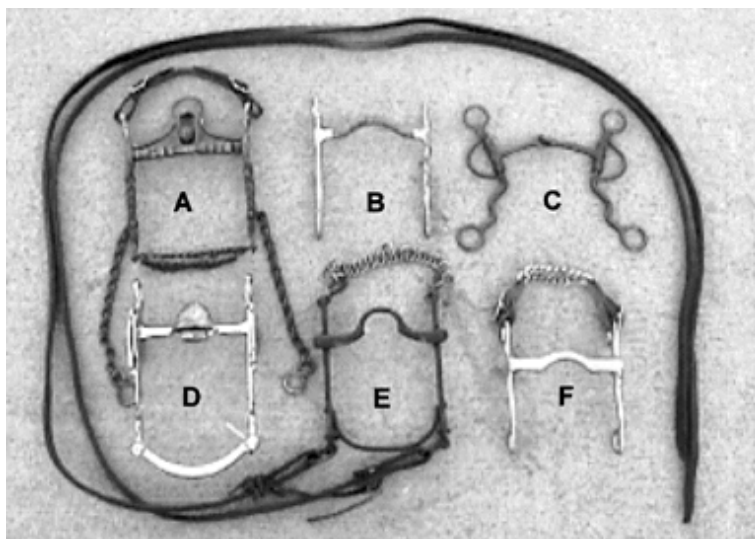


Figure 42. Three main styles of bits: (a) a spade bit with spoon port, braces, roller, slobber chains and rein chains; (b) a sweetwater copper mouth piece curb bit; (c) shanked sweet iron snaffle with two rein rings; (d) high copper covered port with cricket roller, decorative sliver shanks; (e) medium port sweet iron curb bit; (f) low port grazing shank curb bit.

Headstalls

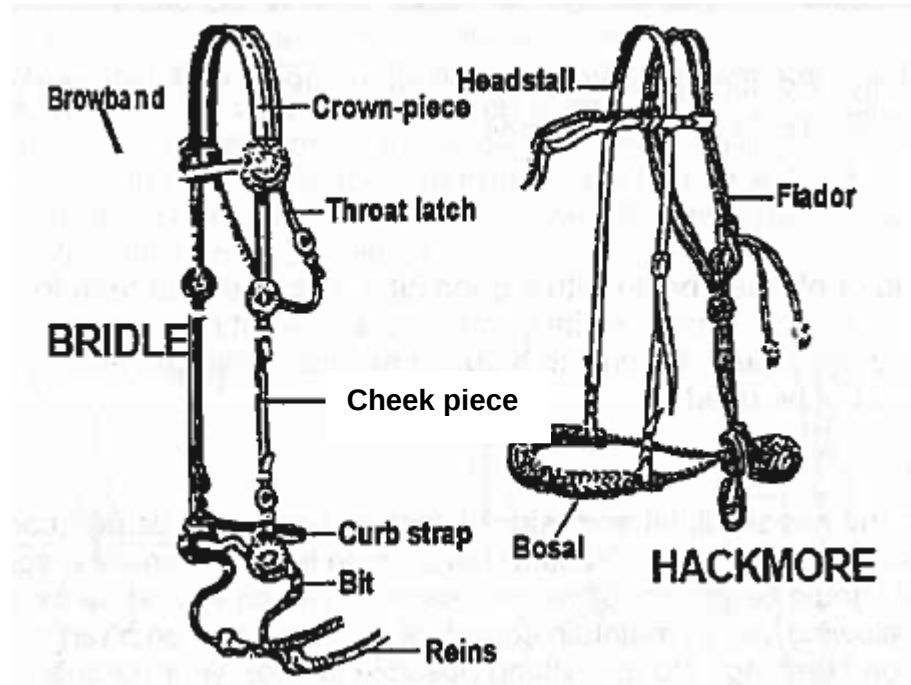


Figure 43. Browband headstall with curb bit on left; hackamore headstall with a rawhide bosal on right. This is an excellent training tool that eliminates pulling on the mouth of the horse being trained.

Saddles

The western saddle was developed for working cattle and riding long distances. It has a horn, cinch, wide-stirrup leathers called fenders, and often a rear cinch. Designs are often tooled into the leather to decorate western saddles. The rear cinch helps keep the saddle in place when roping and working cattle. Wide fenders protect the rider's legs from horse sweat and thorns. A western saddle is designed for use with thick saddle blankets or pads.

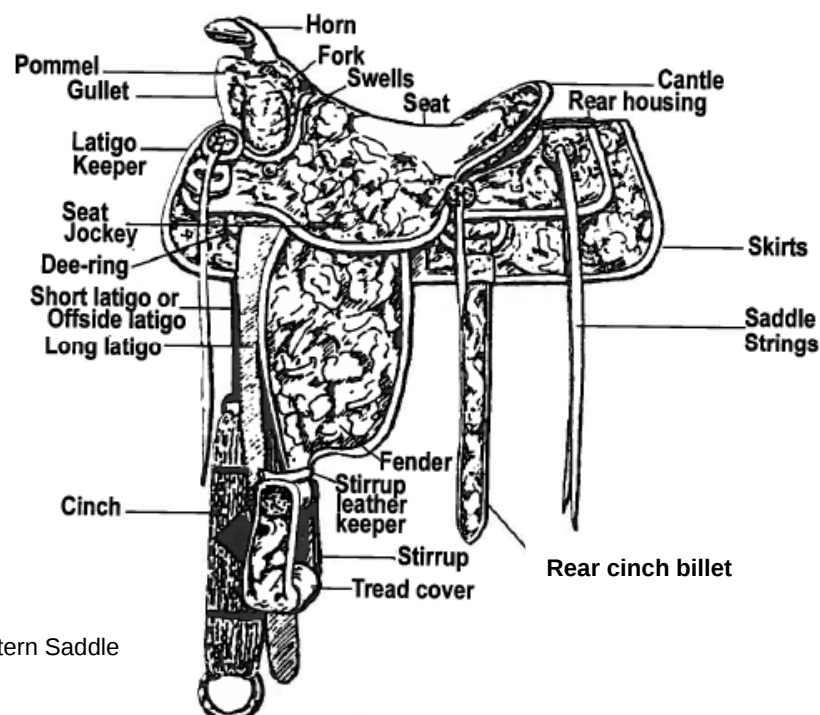


Figure 44. Western Saddle

Saddles that receive proper care will last a lifetime. Store them in a manner that supports the correct shape. Clean the saddle regularly with a leather cleaner and conditioner and use saddle oil. Replace worn or broken parts before they affect the function of the saddle. Always use a clean and dry saddle pad on your horse. There should be enough pad thickness to keep the gullet of the saddle above the withers and you should be able to place at least three fingers vertically between the withers and the saddle gullet.

Store your equipment properly and keep it out of the dirt and weather. A saddle rack will help your saddle keep its shape during storage.

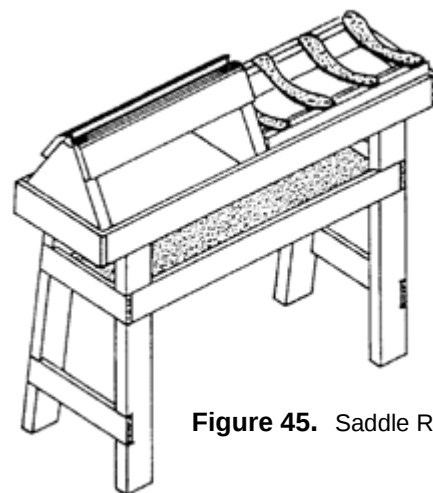


Figure 45. Saddle Rack

ENGLISH TACK & EQUIPMENT

The English riding styles are the hunt seat, saddle seat and dressage.

Hunt seat

Acceptable bits include snaffles, pelhams, kimberwickes, and Weymouth. All bridles must be fitted with cavesson nose bands. *Martingales*, either running or standing, are permitted in classes over fences. Martingales are training equipment not allowed in flat under saddle classes. Correctly adjust the bit to the horse's mouth. Snaffle bits are usually correctly adjusted if they make one or two wrinkles in the corners of the horse's lips. Consult with your leader or riding instructor to learn more about proper bridle fitting.

The *snaffle bridle* uses a non-leverage bit called a snaffle and is the most commonly used bridle in hunt seat and dressage riding. The bridle is made of plain leather (raised or flat) with a browband, cavesson, throat latch and a single set of closed reins. A dropped noseband, figure-eight noseband and flash noseband are all training devices that fit below the snaffle bit and keep the horse's mouth closed. They are allowed if riding dressage seat. Refer to your Horse Show Rule Book as they may not be allowed in all English classes.

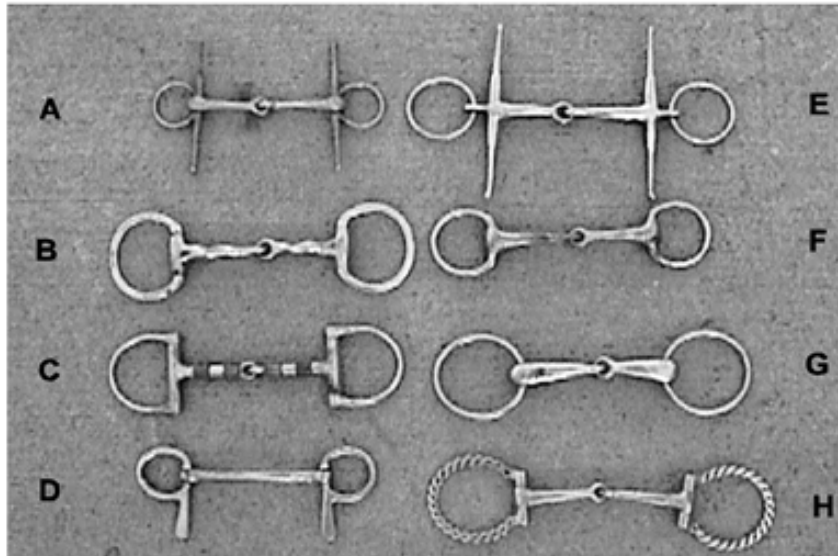


Figure 46. Types of English Snaffle Bits: (a) full check snaffle 4-inch mouth; (b) eggbutt snaffle 5-inch mouth with a slow twist; (c) D-ring snaffle with copper rollers; (d) mullen mouth spoon check snaffle; (e) fulmer snaffle; (f) eggbutt bridoon; (g) 0-ring snaffle large diameter hollow mouth piece; (h) western D-ring, decorative rings.

The pelham bridle uses a leverage bit, called a pelham. This bridle is different from the snaffle because it has two sets of closed reins attached to the curb bit. The pelham also has a curb chain. When the top rein, or snaffle rein, is pulled, it puts pressure on the corners of the horse's mouth, lips and gums. The curb rein, or lower rein, puts pressure on the poll, mouth and chin groove. Correctly adjust the bit to the horse's mouth. Pelham bits usually are fitted with one wrinkle or just moderate contact with the corners of the horse's mouth. Adjust the curb strap so that it comes tight when the bit shanks are a 45-to 50-degree angle to the mouth. A coverter may be used for younger riders who wish to use a Pelham bit, but are not yet skilled enough to ride with double reins. Consult with your 4-H leader or riding instructor to learn more about proper bridle fitting.

The full bridle or Weymouth bridle (also known as a double bridle) has two bits (a snaffle and a curb), two reins, two cheek pieces, a browband, cavesson, throatlatch and a curb chain. The curb rein puts pressure on the poll, mouth and chin groove. The snaffle puts pressure on the corners of the mouth and should rest just above the curb on the corners of the mouth. The curb chain must be twisted flat, rest below the snaffle and be loose at rest and tighten when the curb rein is pulled. There is a lip strap attached to the bit shanks and through the curb chain (see figure 40, E). The lip strap keeps the curb chain in place.

The browband of the bridle keeps the headstall in place and should not pinch the ears. The cavesson encourages the horse to keep his mouth closed. It fits between the cheek pieces and the horse's cheek. Adjust the cavesson to fit and lay approximately two fingers below the cheek bone; neither too tight nor too loose. The throat latch adjustment should allow two to three fingers between it and the throat of the horse to permit the horse to flex its neck.

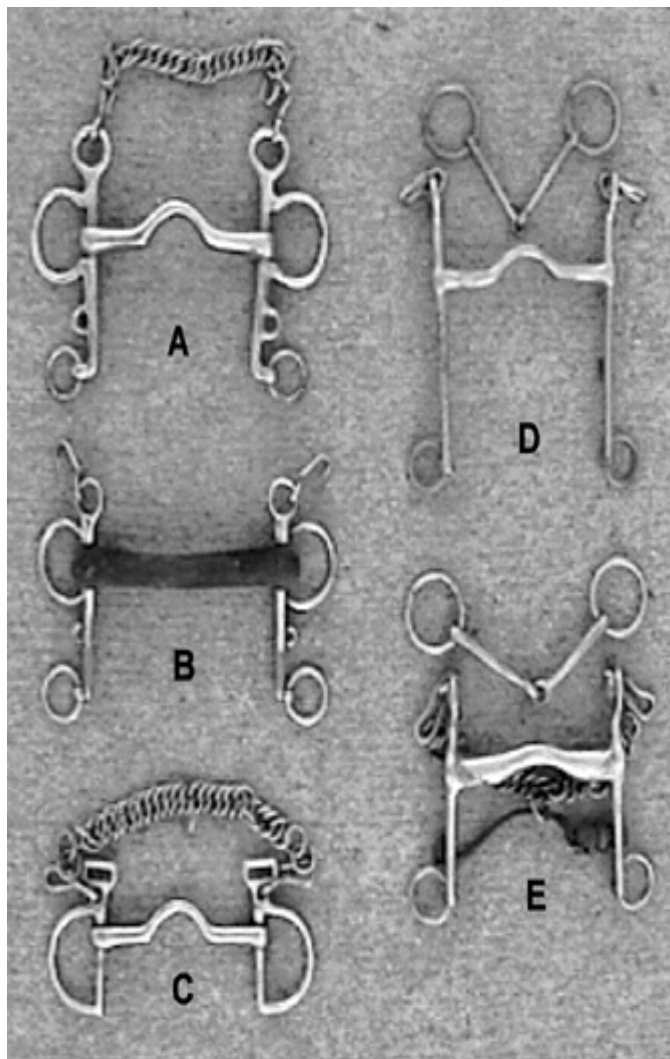


Figure 47. The Pelham bit has both nonleverage and leverage functions: (a) pelham with medium port; (b) rubber mullen mouth pelham; (c) kimberwick, medium port; (d) Weymouth low port, smooth bridoon; and (e) curb with tongue relief, lipstrap and smooth bridoon.

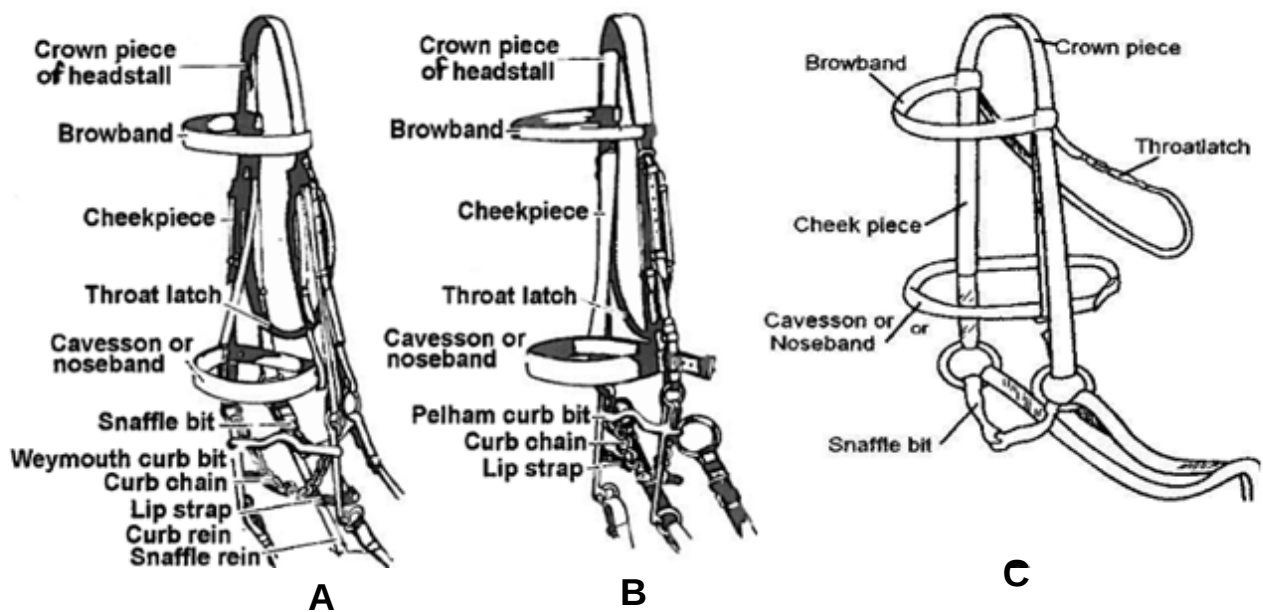


Figure 48. Three types of bridles: (a) Full or Double bridle; (b) Pelham, double-reined bridle: (c) Snaffle Bridle

Saddle seat

Full bridles are required in saddle seat. Martingales are not allowed. A flat English-type saddle is required.

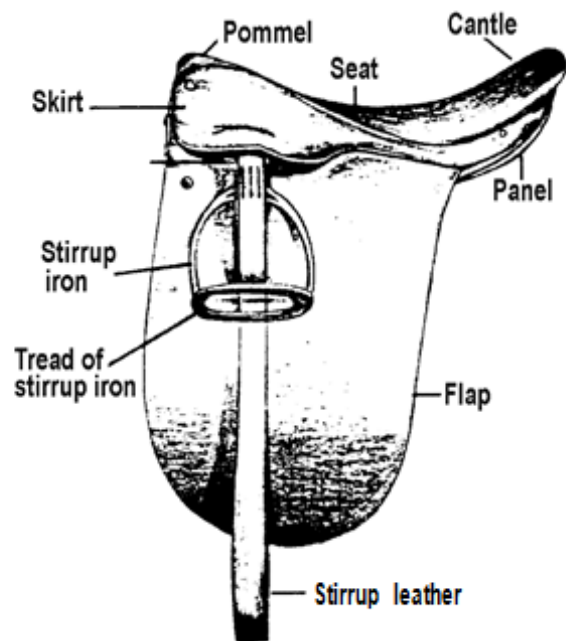
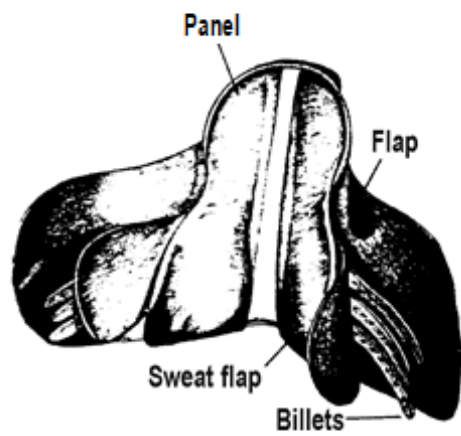
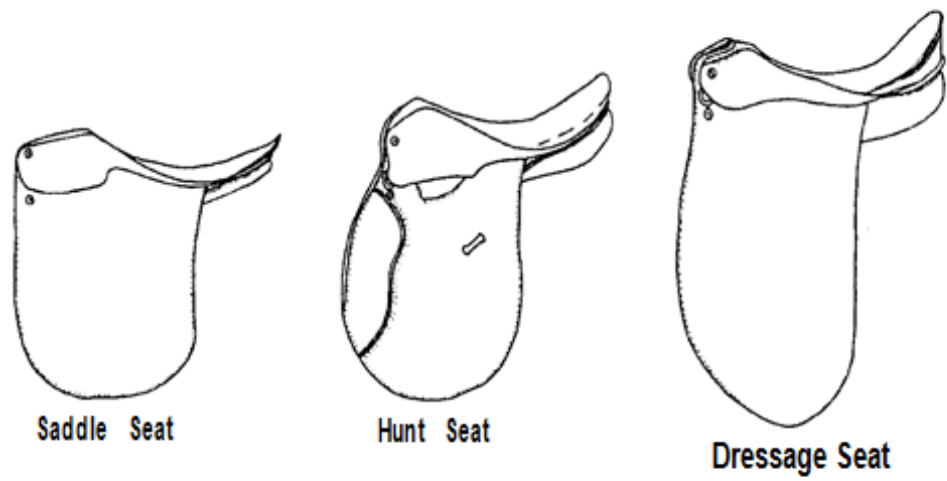
Dressage

Snaffle bridles are used in all lower levels and for most training, while full bridles are used in upper levels.

Saddles

The English saddle comes in many styles. The girth is attached to two or three billet straps that are under the flaps. English saddles are designed to conform to the horse's back and fit closely with a minimal amount of padding. They have metal stirrups and are lightweight. The flaps protect the rider from the horse's sweat. Some saddles have knee rolls to help riders keep their legs in place. The skirt of the saddle protects the thighs of the rider from the stirrup bars and buckles.

Figure 49.
English
Saddles



SADDLING AND BRIDLING

When you purchase a new saddle, whether English or western, make sure the seat fits your body. The length and depth must be suitable to the rider; you cannot ride well if the saddle does not fit properly. The saddle must also fit the horse properly.

Develop safe habits when saddling and bridling your horse, and always consider the horse's behavior and reactions.

When you catch your horse, it is best to use a halter rather than a bridle. Let the horse know of your presence by speaking softly and gently touching him on the shoulder. Always approach from the left side and slip the lead rope around the horse's neck. This gives you control of the horse until you have the halter in place. After you catch and halter the horse, give the horse a small reward—a pat on the neck or some rubbing will do.

Tie the horse with a quick release knot or cross ties with panic snaps and give him a thorough grooming before you saddle and bridle. Pay extra attention to cleaning the areas covered by the bridle, saddle and cinches or girth. Clean out the horse's feet using a hoof pick.

Many people leave the horse tied while they saddle, but it's preferable to untie the horse and have someone hold it by the lead shank while you saddle it. This gives you control of the horse. If the horse is tied and you move from one side to another, walk behind the horse at a safe distance.

What is a safe distance? The closer the better; as the further away from the horse you get, the more power/force behind the horse's kick. Never cross under the lead rope between the tied horse and a fence or post. If you untie the horse and hold the lead rope as you saddle, get a short, light hold of his head as you cross back and forth.

When you are ready to saddle up, make sure to check the underside of the saddle blanket to be sure it is free of burs, straw or debris. Lay the saddle blanket or pad on the horse's back. Be sure it is even on each side. Always lay the blanket or pad several inches forward and slide it back into place. This makes the hair under the blanket or pad lie smooth. Remove all wrinkles.

Tacking up the western saddle

Fold the off stirrup, cinches and saddle strings over the seat of the saddle or have the cinches securely tied on the off side. If the stirrups are short, hook the stirrup tread over the horn. Slip your right hand into the hole formed by the fork in front of the seat and lift the saddle over the horse's back. Lift just enough to clear the withers and hold the saddle steady at the top of the lift, so it will settle easily on the horse's back. You can steady the saddle at the top of the lift by placing your left hand on the edge of the front skirt. Smaller riders will find it necessary to use both hands and hold the saddle under the gullet with the left hand while grasping the rear skirts or cantle with the right hand. Many western riders have the habit of swinging the saddle up with the off stirrup and cinches flying. Stirrups are heavy and cinch rings are hard; a horse flinches to absorb these hard knocks when stirrups hit (see figure 51). Do not get into this habit. Instead, lift the saddle and settle it gently on the horse's back.

Next, you will need to move to the off-side to check the stirrup, cinches, saddle strings and blanket to ensure they are straight and a correct length.

Return to the near side. Check the position of the saddle, raise the blanket edge where it lays over the withers to allow air space, swing the near stirrup over the seat and thread the latigo through the cinch.

Follow several safety precautions when cinching. As you reach for the front cinch, watch both ends of your horse. Fasten the front cinch first. Pull it up smoothly and slowly, do not jerk it tight. Fasten it snugly but not tight; next fasten the rear cinch. Finally, fasten and buckle the breast collar, or martingale straps. Remember that on double-rigged saddles you attach the front cinch first, then the back cinch; when unsaddling the back cinch first, then the front cinch.

Tighten the front cinch just enough to allow space for your hand, with the fingers held flat, between the horse's body and the cinch. The rear cinch should not be tight but should be against the skin. It is important to have a hobble strap connecting the front and the back cinch.

Tacking up the English Saddle

Check the underside of the pad to make sure it is clean then place the pad on the horses back and adjust it so there are not wrinkles. Lift the saddle (and pad if it is attached) up and over onto the horses back. Lift the saddle pad up off of the withers into the gullet of the saddle. Attach girth to the off-side billet straps. Slide girth through the martingale loop, if you use one, pull the girth up and attach it to the near-side billet straps. Do not pull up tight. Recheck the girth after you walk your horse to the mounting area. Pull stirrups irons down just before you mount. Always put stirrup irons up after dismounting. Remove the girth from both sides of the saddle when untacking.



Figure 50. Do not throw the saddle onto the horses back. Loose cinches can hit the horse's legs and startle it.

Bridling

When bridling a horse with a western bridle, untie the halter from the tie rail, fasten the crownpiece of the halter around the horse's neck, or loop the bridle reins over its neck so you can hold them if the horse pulls away. Loop the reins over his neck to keep them off the ground and from being stepped on by the horse.

When you bridle for English riding, put the reins over the horse's head onto the neck. Untie the halter from the tie rail and fasten the crownpiece of the halter around the horse's neck. Place the headstall or crownpiece in your right hand. Continue as shown in figure 51.



Figure 51. Be safe when bridling the horse

When bridling, the rider must stand close to the horse's neck, just behind its head. This position is safe since the horse cannot throw his head and hit your face. Holding your right arm over his neck and poll will help keep his head down and your arm in a position to be dropped around the neck to help hold the horse. Work firmly but gently. With your right hand, pull the headstall up so the mouthpiece of the bit is near your horse's teeth. When bridling with a cavesson, hold the cavesson in your right hand with the crownpiece. Use your left hand to guide the bit between the horse's lips. When his jaw relaxes, and the mouth opens slightly, pull up with your right hand. The bit will slide smoothly between the teeth. If the horse is stubborn about opening its mouth, press on the horse's gums at the gap between the incisors and molars an area known as the bars of the horse's mouth. Do not jerk or pry at the mouth with the bit. Move your left hand to hold the crownpiece of the headstall above and in front of the horse's ears (see figure 52). Now you can lower the cavesson with your left hand. Be gentle as you bring the headstall over the ears. Put the crown piece over the far or off ear first and then slip the other ear in working towards you. The horse will be less likely to pull away and escape, if done in this order. Use your right hand to protect and guide the ears under the crownpiece. Use caution when bridling horses, especially those you are not familiar with, since some horses are extremely shy about their ears and will resist by slinging their head. Finally, fasten your throatlatch, if the bridle has one.

After one more step, you are ready to ride. Lead your horse for a few steps; then check your front cinch or girth again. You may be able to tighten it a few more notches. Check the front cinch or girth again after riding a short distance.

Untacking Your Horse

When your ride is over, and you are ready to unbridle, fasten the loose halter around the horse's neck first. Put the bridle reins around the neck to keep the horse in place while you change to the halter. Undo the bridle throatlatch and cavesson and remove the bridle, taking care not to hit the horse's teeth. To properly remove the bridle, slide the crownpiece forward over the ears with your left hand. When free of the ears, hold the headstall loosely for the horse to spit out the bit. Then lower the headstall to allow the bit and curb strap to fall freely from the mouth and chin. You may need to undo the left side of your curb strap to allow the horse to drop the bit comfortably.

Continue holding the horse and rub its head and poll where the headstall rested. Your horse will soon learn to expect this rubbing and will wait patiently instead of trying to break away. Halter the horse and hold the lead rope as you unsaddle. Do not tie the halter rope until the horse is unbridled.

Be sure to tie up the cinches and breast collar before pulling the saddle off. When unsaddling, lift the saddle slightly before pulling it off. This loosens the grip of the sweaty leather and blanket on the horse's hide.

Wet saddle blankets should be placed in the open, or on top of the saddle to allow them to dry completely before the next use. The bit should be rinsed to remove slobber and feed particles. A quick wipe-down with a damp cloth will remove mud and sweat from your tack.

BASIC WESTERN HORSEMANSHIP

Horsemanship, or equitation, is the art of riding in a balanced and graceful manner. This requires time and patience and can only be achieved if you and your horse work together as a team.

The following suggestions will help you become a better rider. This basic information can be applied to every type of riding with slight modification.

Mounting

There are two positions considered proper for mounting. In the first position, as shown in figure 52, the rider stands by the horse's left shoulder with his body facing a quarter turn to the rear of the horse. The rider's head is turned so both ends of the horse can be watched. This is the safest position to use when you mount.

It is easier to place your left foot into the stirrup from this position but be careful not to rake the toe of your boot along the horse's side as you swing up. Brace your knee against the horse for support to keep your foot away from its side.

When you use this position, take one hop on the right leg and go into the second position briefly as you swing into the saddle.

The second position, shown in figure 53, is used when you are tall enough to stand and place your left foot in the stirrup without moving back to the rear of the horse. You should face squarely across the seat of the saddle. Turn your left foot so the toe of your boot is pointed forward or into the cinch.

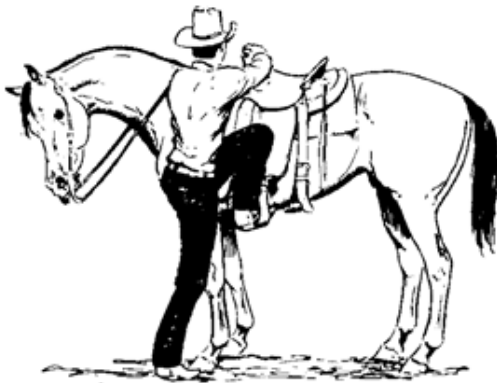


Figure 52. First position. Use this method to mount green-broke horses, or horses unfamiliar to you.



Figure 53. Second position. Use this method when you are tall enough to place your left foot in the stirrup without moving back to the rear of the horse.

In both positions, hold the reins in your left hand with the left rein slightly shorter with enough tension to steady your horse. Place your left hand on the horse's neck just in front of his withers. Steady the stirrup with your right hand until your left foot is in the stirrup. Place your right hand on the saddle horn or the far side of the swells, and your left knee against the horse. Swing up and into the saddle with a spring by pushing with your right leg. Your body will be balanced by the triangular base of support formed by your hands and knee. Do not grab the cantle of the saddle when mounting.

Spring hard enough with your right leg to carry yourself up and over the saddle with a minimum of weight on the left stirrup. Lower yourself smoothly and lightly into the seat of the saddle. Do not swing too high and plop into the saddle.

If you consistently pull the saddle to the side, you are not springing up hard enough. With practice, you will mount in a smooth, easy motion. Smaller riders may need to use a mounting block or ask for a "leg up", to mount safely.

Never mount or dismount a horse in a barn or near fences, trees or overhanging projections. You may be injured if a horse sidesteps or rears.

A horse should stand quietly for mounting and dismounting. Control its head through the reins. If your horse will not stand, ask someone who can handle horses to help you.

Dismounting

When you dismount, use the same hand position. Take the slack out of the reins to steady the horse. While holding the reins, place your left hand on the neck of the horse, grasp the saddle horn with your right hand, shift your body weight slightly to your left leg and keep your left knee in close to the horse. Your right foot should be free of the stirrup.

Swing out of the saddle and keep your right leg as close to the horse as possible without hitting the cantle of the saddle or the horse's rump. Do not swing your right leg in a wide arc. Keep it close to the near side of the horse so you face slightly forward when your right foot touches the ground.

Push down on your left heel to allow your foot to slip out of the stirrup. Do not roll your left foot on its side to slip it out of the stirrup. If you are not tall enough to reach the ground with your right foot, slide the left foot out so just the toe of the foot is in the stirrup. As your right leg swings over to the left side, slide the left foot out of the stirrup and lower both your right and left foot to the ground by sliding down the side of the horse.

Seat Position

Your position in the saddle is important to maintain balance and rhythm for ease of riding, and to carefully use aids.

Sit tall in the saddle in a balanced, relaxed manner. Keep your back erect and flex with the horse. Do not slump in the saddle and never sit back on the cantle with your feet shoved forward. You will find it necessary to change your seat slightly for different types of riding, but the basic principles remain the same. You should sit where the horse can be controlled with aids in a comfortable riding position. Keep your body weight where it will help rather than hinder your horse's movements.

Note how the rider in figure 54 sits erect and square in the center of the saddle. The rider sits deep in the seat of the saddle and not on the cantle. The rider should tip forward or backward on his or her pelvis. The ball of the foot should be the contact point with the stirrup, pushing down on the heels and pulling up with the toes.

Train the stirrup leathers on your saddle to turn at right angles to the horse's body to prevent pressure on your feet and help you hold your stirrups more securely. When you store your saddle, twist the stirrups one and one-half turns inward and insert a broomstick in both stirrups. In any style of riding, when the rider sits in the saddle the legs forming a straight, vertical line through his ear, center of shoulder, center of hip and back of heel (see figure 55). Stirrups should be long enough to allow the rider's heels to be lower than the toes, with the knees bent slightly and the toes directly under them. The body should always appear comfortable, relaxed and flexible and the back should be nearly flat. The rider's body should be supple, poised and balanced in rhythm with the horse's motion.



Figure 54. Correct seat position is necessary for control and comfortable riding.



Figure 55. Correct hunt seat position

BASIC ENGLISH EQUITATION

The skills required for English riding are like those used for western riding. The rider must sit in a balanced position that does not interfere with the horse's own balance or ability to perform.

Mounting

Mounting and dismounting for English equitation is very similar to western style. Place the reins over the horse's head. Hold the reins in your left hand against the horse's neck, contact with horse's mouth slightly to prevent the horse from moving. The rider should stand on the left side of the horse facing the horse's quarters. The rider's head is turned so both the horse's head and quarters can be observed. From this position, place your left foot in the stirrup, being careful not to push your toe into the side of the horse. Put your right hand on the pommel of the saddle. Then, take one hop, and push up from your right leg and gently swing into the saddle, being careful not to brush the horse's side or quarters with the right leg. Sit gently into the saddle. Smaller riders will need a mounting block or a "leg up" to mount safely.

Dismount

To dismount, place both reins in the left hand on the neck of the horse. Take both feet out of the stirrups and place your right hand on the pommel. Lean slightly forward, then swing your right leg over the back of the horse, being careful not to brush the horse's quarters, landing on both feet on the left side of the horse. Take the reins over the horse's head and run up the stirrup irons.

General Position

The position in the saddle for English riding is basically sitting in the center of the saddle on the seat bones, sitting deep and tall. The head and neck are set squarely on the shoulders and the eyes look forward. Shoulders should be directly over the hips, keeping weight evenly distributed over the seat bones. Legs should be underneath with the inside of the calves on the horse's side and the rider's ankles in line below the hips. The ball of the foot should be placed on the stirrup iron. Heels should be down with toes facing forward at a slight angle (no more than 45 degrees). A general rule to measure correct stirrup length is that when the leg hangs loosely (out of the stirrup), the bottom of the stirrup should line up to the bottom of the ankle bone. Shoulders and elbows are relaxed at the side of the body with the hands just over the horse's withers and in front of the saddle.

RIDING AIDS, GAITS AND LATERAL WORK

Natural Aids

Your voice, hands, legs and seat/weight/body position can control your horse if your horse is trained to respond to them. Begin using these tools in a very definite manner in the early stages of training. As you progress, your horse will respond to very light applications of these aids.

The following discussion of specific aids for different responses indicates how you can communicate with your horse.

Voice

Your voice is a very important aid when working your horse. Certain words such as "whoa," "easy" and "back" are readily understood by a horse. Many show horses have learned the words "walk," "trot," "lope" and "canter" from hearing them repeatedly during lunging, training and in the show ring. Some riders do not use complete words, but instead develop voice sounds (e.g. clicking or kissing) to mean something to their horses. Be consistent and use the same word or cue each time. Repeat it often to teach your horse what you mean. Make your sounds distinct from each other. For example, whoa and go sound too similar to be effective. Many show ring judges do not like to hear voice commands, so use them very softly when showing or avoid using them in the show arena.

Voice commands should be used in a subtle manner, and in conjunction with other natural aids. Your tone of voice means as much to your horse as actual words. It indicates pleasure or displeasure. Learn to always use a low, soft voice when working around your horse. Screaming and/or yelling will only frighten the horse.

Hands

Your hands control the forehand (forequarter) of your horse directly by use of the reins. In advanced riding, your actions on the reins have an indirect influence on the hindquarters. Relax your hands and arms, hold your shoulders back and down, and keep your upper arm in a straight line with your body. Your forearm forms a straight line from the elbow to the horse's mouth as you hold the reins. Some movement of the arm is permissible, but excessive movement will be penalized by a judge.

Good hands are steady, light, soft and firm in their actions. You can achieve this only if your body is in balance and rhythm with your horse.

As you begin reining and rein cues, remember the importance of relaxing your arms, elbows, wrists, hands and fingers. Allow a small amount of slack in the reins to relieve pressure on the bit but hold the reins firmly enough to maintain light contact with the horse's mouth.

When riding a young horse (five years or younger), you can hold the reins with both hands when using a snaffle (non-leverage) bit or a bosal. Learn to signal or cue with your reins (a give-and-take action) by slightly flexing your hands. Simply opening and closing your fingers is cue enough for a trained horse, if you have the correct degree of contact with your horse's mouth. The proper use of two hands to guide and set the horse until it learns to respond to cues is the mark of a good equestrian. As your horse responds, you may gradually switch to the use of a single hand on the reins when riding Western; but remember, it is wise to use two hands when your horse isn't handling as smoothly as you desire outside the show ring. Don't hang on your horse's mouth for balance or control and never yank on your horse's mouth with the reins.

If you plan to show your horse, study the rules on how to hold the reins and use them in ways that allow you to have the softest hand on your horse's mouth. When using all the aids, provide release when the horse responds to pressure.

Legs

Your legs control the forward motion of your horse and its barrel and hindquarters. When you squeeze your legs, your horse should learn that this is a signal to shift its weight to its hindquarters, lighten its weight on its forequarters and get ready to move forward. Getting a response to this cue is very important. You will need it every time you move your horse, ask for collection, change a gait, or correct misbehavior.

Pressure from your calves and heels controls the horse's shoulders, barrel and hind-quarters. As you press with one leg or the other, your horse responds by moving away from the pressure or by moving against the pressure (see maneuvers in all figures in this chapter). When your horse responds to leg cues, less cueing is required by your reins. Balance pressure on the horse by using contact in the seat of your saddle and your thighs. Maintain only light contact with your knees so your lower legs can be used for cueing.

Seat/Weight

Although horses are trained to move away from pressure, they move under-weight. Your body weight becomes a cue when you shift position in the saddle. This does not mean that you throw your weight by leaning excessively; you can give a weight cue by placing more pressure on one stirrup than the other or by shifting to press more firmly on one seat bone. As you train your horse, you will find responses come from very slight weight shifts. Learning to be a good equestrian involves learning the effects of the aids, combining them to make your horse perform, and using them in training and showing. The art is in developing a feel for when to apply the aids and when to release them.

Artificial Aids

Spurs, Whips, Bats and Crops

Use artificial aids only to reinforce natural aids. First, press the horse with the calves of your legs. If your horse doesn't respond, tap the horse with your heel. Finally, it may become necessary to tap the horse with your bat or touch it with a spur. Always tap the horse in the spot where your leg will touch.

Give the lightest cue first. If your horse doesn't respond, use increasingly stronger cues. This way, you tell your horse to respond or light discipline will follow. Remember, however, to give the horse time to learn what the cue means before using negative reinforcement. Ask your horse first, then, tell, demand only if necessary.

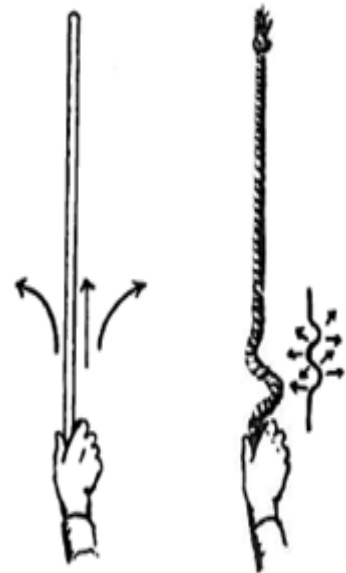


Figure 56. Visualize the thrust of the stick on the left. It demonstrates the forward motion of a horse, while the rope on the right cannot move forward, backward, or be turned.

Body Position and Aids in Motion

General Pointers

The rider should maintain a natural position during all gaits. Practice proper cueing until your horse moves into any of the gaits lightly and smoothly. This will help keep your balance and avoid punishing your horse's mouth and side(s), which occur if you lose balance. Get light control of your horse with the reins before cueing it with your legs, so the horse does not rush out and have to be pulled back.

The horse's head and neck should always be carried at an angle that is natural and suitable to the horse's conformation and breed at all gaits.

Forward Motion

Before your horse can make any kind of move, there must be forward motion. Think of forward motion as the thrust of the horse's hind legs with all of their power going through the horse's spine, moving the body straight from the point of impulsion. Study figure 56. The stick can be moved forward, backward or turned, but the rope cannot. Keep your horse moving straight and true from the impulsion of its hind-quarters. If you don't, it will be like trying to push a rope.

Walk

The walk is a four-beat gait in which your horse should stride out freely and willingly. It is a natural, flat-footed, forward-working gait. Encourage your horse to walk out by using your seat and legs to drive the horse forward.

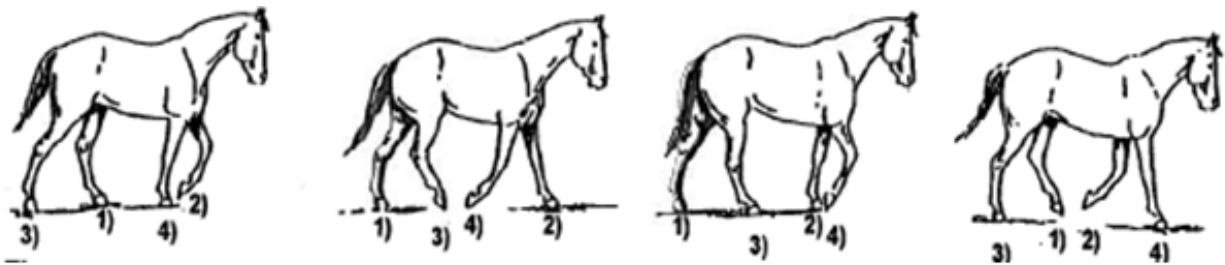


Figure 57. The walk is a four-beat gait.

Jog or Sitting Trot

The jog or trot is a smooth, ground-covering, two-beat, diagonal gait. The horse works from one pair of diagonals (left-front and right-hind) to the other (right-front and left-hind). The jog or trot should be square and relaxed with a straight, forward movement of the feet. Horses that walk with back feet and trot with the front are not performing the required gait. When asked to extend the jog, the horse moves out, lengthening the stride with the same smooth action.

The rider should sit when the horse is jogging and not post. Generally, the western rider sits in the saddle when the horse is moving at the extended jog. However, posting is a useful training tool and it is good for the western rider to be able to post properly.

Posting or Rising Trot

English riders use posting diagonals at the trot. In the rising trot, your upper body is inclined slightly forward from the hips, so you remain in balance with the horse's movements. Your body rises by the movement of the horse and your seat returns to the saddle without any loss of balance. The rule for correct diagonal is to post with the outside diagonal pair. This means that the rider rises out of the saddle when the horse's outside front leg (in relation to the rail) and inside hind leg reach forward (off the ground). The rider sits when these legs touch the ground. For example, if riding on the right rein (clockwise), the rider will rise and sit with the left foreleg and right hind leg. Conversely, when riding on the left rein (counter-clockwise), the rider rises and sits with the right foreleg and left hind leg. To change the diagonal, the rider sits for one extra beat of the two-beat trot.

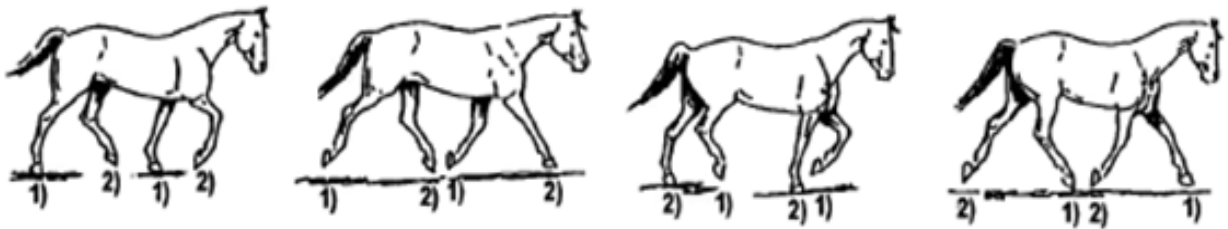


Figure 58. Trot, a two-beat gait.

Lope or Canter

The lope, or canter, is an easy, rhythmical three-beat gait. The footfall pattern for the lope is as follows: beat 1-outside hind leg, beat 2-inside hind leg and outside fore leg, together, followed by beat 3-inside fore leg. Horses traveling at a four-beat gait are not performing the gait properly. The horse should canter with a natural stride that appears relaxed and smooth.

To signal a canter, collect your horse, shift your weight back to the horse's outside hind leg and apply sufficient pressure with your outside leg to instruct the horse to strike out in the proper lead. The horse should be traveling straight and forward. Train your horse to assume a lope from a standstill, walk or trot. You will learn the proper cueing under the section on leads.

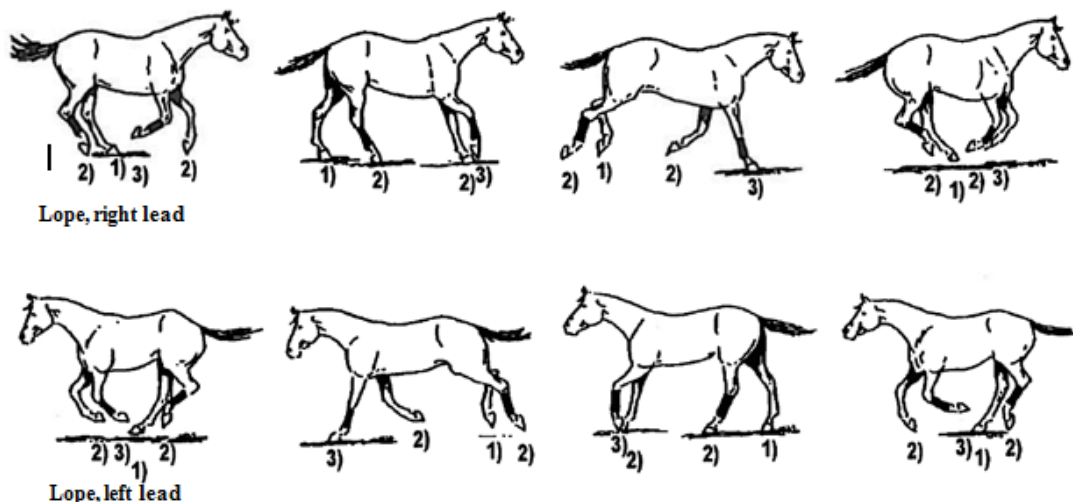


Figure 59. The lope or canter is an easy, rhythmical three-beat gait.

Hand Gallop or Extended Lope

The hand gallop is similar to the lope, but with a lengthened stride. A hand gallop is a three-beat gait.

Leads

The Correct Lead

When your horse lopes or hand-gallops, its body is bent in the direction it is traveling because one pair of legs, one foreleg and one hind leg on the same side of the horse's body, lead or reach farther ahead than the pair on the other side of its body. The horse is on the correct lead when it is leading with the inside pair. Leading with the opposite fore and hind leg is known as cross-firing, which is an uncomfortable gait because the horse is unbalanced.

The correct lead (canter/lope) is important when your horse circles or makes tight turns. A horse will naturally take the proper lead or change leads when it runs free, but it may not do this when it carries a saddle and rider. Show ring rules place a great deal of emphasis on proper leads. A well-trained horse will change leads at the will of the rider. You should learn which lead your horse is on from the feel of its motion. Your inside leg should feel slightly further forward than the outside leg. Do not get into a habit of looking at the horse's shoulders or leaning forward to see the horse's legs.

Training your horse to depart on the lead you want requires patience and practice. Most horses favor one lead over the other. Work on getting the horse comfortable with either lead but spend a little more time on the weaker lead by loping in a circle that requires that lead. Keep the canter slow and easy when training the horse so you can cue it properly.

Train your horse to assume the correct lead at the lope/canter directly from the stop, walk and trot. At any time, the horse does not lead correctly, slow it to a walk or trot and try again.

The following paragraphs describe the aids for using either lead. Study and learn these aids and use them until they become habit. Have control of your horse's head and be sure it is listening before cueing it with your leg; otherwise, your horse will move too quickly, throw you off balance and disrupt your cues. Train your horse to move smoothly into a lope. This will make it easier to apply your cues with proper timing.

Aids

To ask for the lead, bend your horse in the direction of travel, slightly tipping the nose using the rein. With your weight to the outside, squeeze with the outside leg behind the girth and, with the inside leg, squeeze at the girth. For example, for the left lead, tip the nose to the left, shift your weight slightly to the right and squeeze with the right leg, using the left leg to ask for the bend. For the right lead, tip the nose to the right, shift your weight slightly to the left and squeeze with the left leg, using the right leg to ask for the bend.

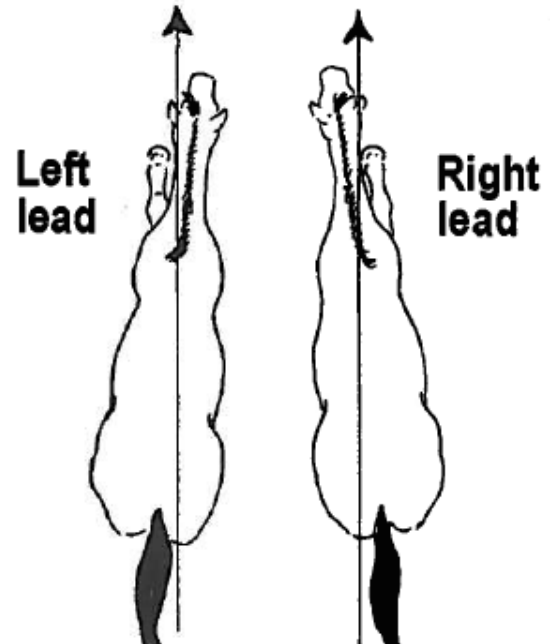


Figure 60. Note foreleg and hind leg on the same side reach farther ahead.

When your cues and timing are correct, and your horse is working willingly, you will feel a slight lifting of your horse's body on the lead side as it takes off. This is the result of the horse shifting its weight back to the rear leg, ready to lightly spring forward and reach out with the leading hind leg. This gives a smooth, gliding sensation and you are loping with the correct lead.

In early training, apply cues more firmly. As the horse learns, it will respond to lighter cues. When cued properly, a horse will improve in riding circles, figure eights, serpentine, quadrilles or just plain turning. A horse that can execute a forehand turn is easier to teach lope departures to because you can engage the hindquarters.

Changing Leads

Before changing direction at the lope or canter a change lead is often required. A flying lead change at the lope or canter is done by aligning your horse's body in a straight line and then asking for the change during a moment of suspension, as illustrated in the footfall sections. There are times when a counter canter is asked for and used as a training tool. The simple change is executed at the walk or trot and the flying change is executed through the lope.

Lead-Changing Aids

When executing a change of leads, the rider will straighten the horse from its direction of travel and cue it into the new direction of travel. Lift, shift, change, lift your hand (the horse's shoulder), shift your legs, change your lead. This will require changing the bend of the horse's body and moving your weight to the outside while changing leg pressure from the outside leg of the initial direction to the outside leg of the new direction. It is common for a horse to change in the front and not in the rear (i.e. cross-firing). Should this occur, exaggerate the change of your weight and leg pressure to move the horse's hips into the new lead (see footfalls for the timing of this maneuver). Make sure you can transverse your horse's haunches easily at the walk and trot. Practicing simple lead changes can be helpful at first so you and the horse can understand the maneuver of changing the arc and direction of travel. Don't be afraid to get help so you fully understand that lead changes are not throwing the horse off balance into a change of direction and hoping he gets the idea.

Counter Canter

The counter canter is when the horse leads opposite of its direction of travel.

Counter-Canter Aids

The aids for the counter-canter are the same as cueing for a lead. However, upon departure into the counter-canter, it is essential that the rider's weight remain centered and balanced to ensure that the horse does not change leads out of the counter-canter. The horse must stay arced to the direction of the lead, not the direction of the circle. Your hands will offer shoulder support, using the leg much like the rudder of the boat turns from behind push the hip out, almost feeling the back end come around the front.

Stop and Back

Backing

Grip the horse with your thighs. Squeeze with your legs to collect the horse while you maintain light rein pressure to prevent the horse from moving forward. When your horse is collected, use the word "back." Flex your reins gently, continue to squeeze with your legs, apply pressure, and provide release with each step. You are asking for forward motion but in reverse. Control the direction of backing by varying the degree of pressure of one leg or the other. In reining, a rider will sit back and open the lower leg allowing the horse to back freely. Taking the weight off the withers allows the shoulders to lift and front feet to move easily. In horsemanship and pleasure a spur backup is being taught, when you squeeze your spurs, slightly sit back, and cluck to your horse. At first you will use your reins to pull him back, until he starts to understand the lifting of the ribcage with your leg means back. Release the spur pressure to stop the backing motion.

Backing is unnatural and hard for a horse. Be patient and ask for a step at a time. Gradually increase the number of steps that your horse will back and reward your horse by stepping it forward and releasing pressure. Proper backing is smooth and performed easily without excessive jawing or resistance by the horse (for footfall patterns of backing see figure 58, as the footfall pattern for the back is like the trot in that it is also a two-beat diagonal gait).

Stops/Halt

A good stop is not necessarily a sliding stop. A good stop is balanced and smoothly executed. The horse's hindquarters are well under its body to balance its weight. The forequarters, neck and head are kept light. The horse is balanced and ready to do what is required next.

Timing is important when you ask for a stop, especially from a lope. You should use some preliminary cue to alert your horse that a stop is coming, which will allow it time to adjust its balance in preparation.

To cue for a stop, sit deep in the saddle, say, "Whoa," and then reinforce it by asking with the reins.

Sliding Stops

Stops for reining, cow horse, and ranch horse require the horse to stop on the hindquarters which is referred to as a sliding stop. A horse must be willing to stop with your voice and seat. Pulling on a horse only makes him pull back on you, which throws you forward and makes him stop on the forehand. You must drive him to his stops with your legs, bumping him to keep his rib cage lifted, sit down, put the weight in your stirrups to help keep you back in the stop. Don't kick your feet out in front of the cinch, they can't support you that way and do not throw your upper body back. Say "Whoa," lightly lifting the front shoulders with your reins.

Spur Stops

Horsemanship, Pleasure, Trail and youth horses sometimes have been trained to respond to what is called a "spur stop". Understanding how and why the spur stop is used is important. The spur stop was originally developed for young riders



Figure 61. The horse in this figure is stopping too hard. A proper stop includes the voice command *whoa*, a light flex of your reins, a squeeze of your legs and increased pressure of rider's seat to cause the horse to halt and stand square and quiet.

because they sometimes would squeeze with their legs and pull with their hands to stop, giving the horse *whoa* and go cues at the same time. Trainers started to teach spur stops about 20 years ago. When a novice rider got nervous and would squeeze the horse unintentionally sending them forward at a faster pace, this is when spur stops were used originally.

To execute a spur, stop you squeeze with your spurs, lift your hand and say "Whoa". Your horse will learn to stop in a balanced manner. Eventually, with enough practice, you won't have to lift your hand which can cause your horse to raise its head. Pressure on the ribcage is much like pushing on the brake pedal of your car, the harder you squeeze the quicker the stop. If you continue squeezing, slightly lean back and cluck and your horse will then back up. It takes practice to teach these cues but makes for a flawless pattern and you can always stop your horse if the bridle breaks.

The spur stop is a higher-level training skill. We don't want to teach a spur stop on reining or cattle horses because when you're hanging on in pursuit of a fast cow, you don't want them to just stop and lose your working advantage.

Do not get into the bad habit of thrusting your feet forward, throwing your weight back and yanking back on the reins.

School your horse to stop easily on the cues at a walk, then at trot, and finally, at a slow lope or canter. This will allow you time to perfect your cueing and give your horse time to learn what the cues mean. You will work more softly on the horse's mouth by going slowly at first. When stopping at slower gaits, always make your horse stop completely and stand, preferably with a slacked rein. Do not let the horse walk forward until you ask for the next gait. It is wise to vary the time of standing so your horse does not anticipate a short stop and begin to move.

Don't rush your training. You are making progress when you feel the horse's hind-quarters sink under you slightly when you stop. Keep working for a light response and don't overdo the number of times you ask for stops. As you work, be sure to vary the places where you ask your horse to stop, so it will not begin to anticipate stops at certain points. It is good to allow a horse to stop and then catch his air as a reward after an extended time of cantering or trotting. This teaches the horse that stopping is a pleasant thing.

In the beginning to train for the following movements, it is wise to use a snaffle bit and two hands.

Lateral Movements

Turn on the Forehand

Teach your horse to move or hold its hindquarters in response to pressure from your heel or the calf of your leg behind the front cinch or girth. This control is important in backing, side-passing, two-tracking, holding the hindquarters on pivots and roll-backs, and for correct leads. Turning on the forehand is not a forward movement. The horse pivots on the inside foreleg while the hips move away from pressure in the opposite direction of the nose.

Forehand-Turn Aids

Bend the horse in the direction of the turn (e.g. to the right, horse bent to the right). Right hand/right leg or left hand /left leg. Apply inside leg on the barrel or girth until hips move away from pressure (e.g. right leg behind girth and left leg balances at the girth). Your inside hand asks for the bend while your outside hand balances and prevents forward motion.

Keep your hands forward-lifting up, not pulling-back to stop forward motion.

Turn on the Hindquarters

With the turn on the hindquarter, the inside hind foot remains stationary. The forehand moves around the pivot foot with the front legs crossing over with each step. The turn on the hindquarters is the basic movement for controlled, smooth, fast turns in pivots, roll-backs, pole-bending, barrel racing and working cattle. The horse learns to roll back over its hocks.

Hindquarter-Turn Aids

The inside hand leads the horse into a bend into forward motion, while the outside hand controls the bend. Bend the horse's nose slightly in the direction of the turn. Apply outside leg pressure at the girth, or just in front of the girth, and inside leg pressure at the girth. The rider's weight should focus on the horse's hips. Keep your weight to the inside leg, supporting with the outside leg at the rib cage. If you lean out, your horse will set the wrong leg.

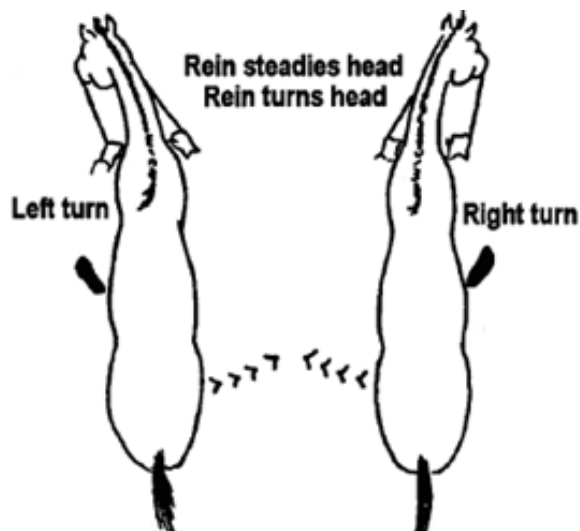


Figure 62. Note the position of the reins and the foot used to cue for turn on the forehand.

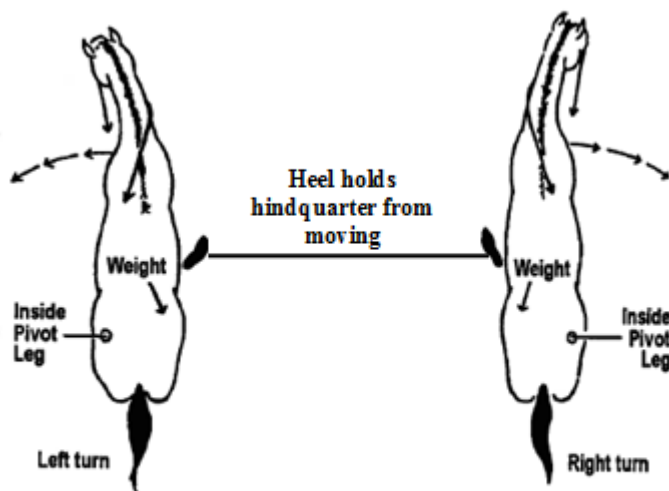


Figure 63. Note position of the reins and the foot used to cue for turn on the hindquarters.

This movement requires time and patience to execute exactly. Do not expect a 360° turn immediately but work one step at a time, applying pressure and release with each step. It is also important that your horse maintain impulsion, which is accomplished by driving the horse's motion forward with your seat and legs.

You should be able to stop the swing of the hindquarters by pressing with your outside leg. This leg cue may not be enough to stop some horses. If this happens, you will need to add another cue. When you feel the horse beginning to shift its hindquarters, apply pressure with your outside leg.

You must learn to feel the movements of your horse through your seat to know what is happening and how to correct any problems. When your horse is willing to execute this movement slowly, you can progress to more advanced movements, such as a roll back.

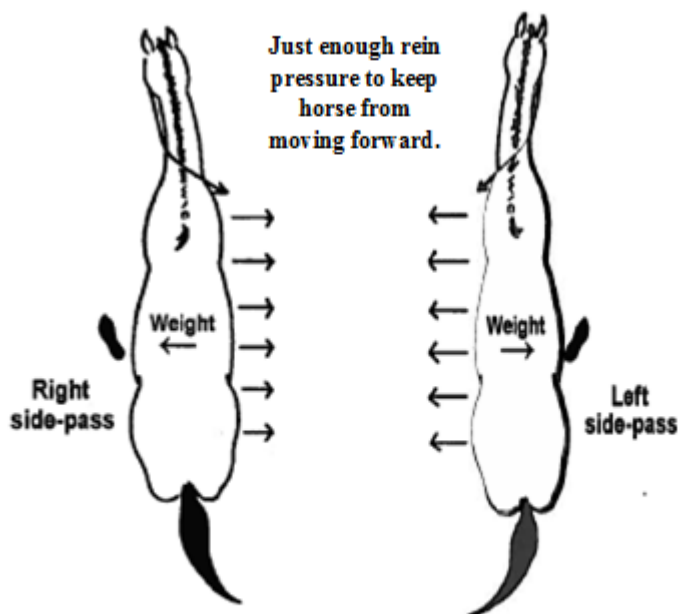


Figure 64. Note position of reins and the foot used to cue for left and right side-passes.

Side-Pass

The side-pass is a sideways lateral movement of your horse by stepping to the right or left with both the forequarters and hindquarters moving evenly together. The horse's legs should cross in front of the opposite supporting legs.

Side-passing is necessary for the smooth opening and closing of gates and is an excellent training tool. Figure 64 shows the cues used to side-pass. To side-pass to the right, use the left rein to turn your horse's head slightly to the left. Hold light contact with the right rein to make the horse move to the right. At the same time, shift your body weight to the left, away from, in the direction of the side-pass, and use your left leg and heel to move the horse's shoulders, barrel and hindquarters to the right. Reverse the cues to side-pass to the left. The right rein tucks the nose to the right slightly and your weight shifts to the right. Use your right leg and heel to move the shoulders, barrel and hindquarters to the left.

You will need practice to learn the feel of the correct rein tension and leg pressure necessary to move the horse to the side without backing or moving forward. It may be helpful to face a fence to keep the horse from moving forward. If the horse backs, simply relax tension on the reins and use your legs to move it up into the bit again. You may need to begin by moving the horse's shoulders first, then the hips, until your horse begins to learn what you are asking. Practice side-passing, and all the movements, in moderation. After the horse performs a few correct steps, do something else.

Two-tracking/Leg yielding

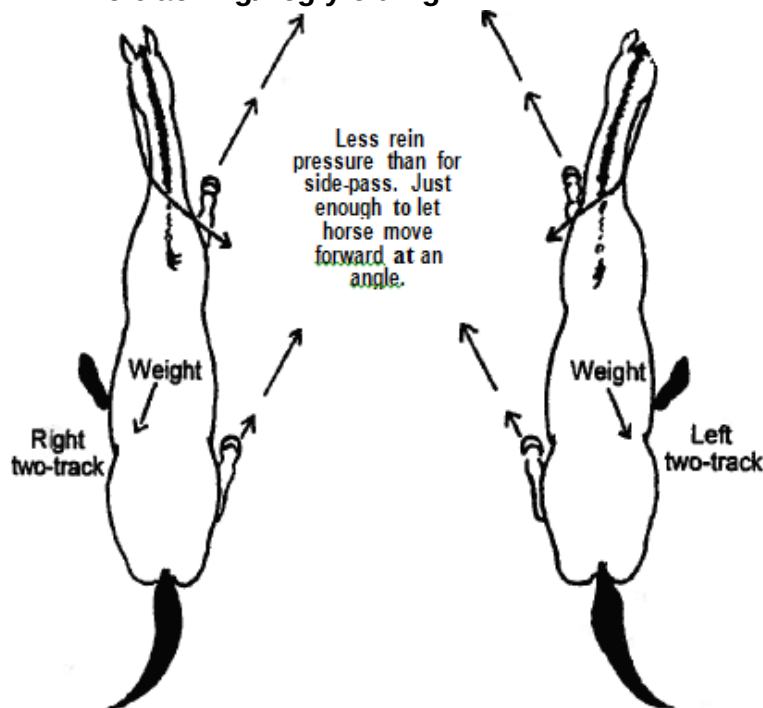


Figure 65. Note position of reins and the foot used to cue for left and right two-track.

Leg-Yielding Aids

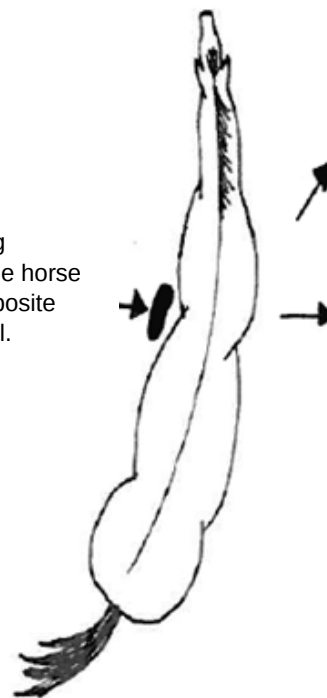
Leg yielding is a forward and side movement with the horse bent in opposite direction of travel (e.g. the horse is bent slightly to the right but moves forward and left). The forehand slightly leads the quarters. The aids for leg yield to the right are as follows: the horse moves forward at the walk or sitting trot. The left leg is near the girth cueing the horse to move over. The right leg keeps the horse moving forward and is behind the girth, controlling the amount of sideways movement. The left hand leads a slight bend to the left. The right hand may be slightly open and leading the horse to the left. The rider must be sitting straight and even.

Two-tracking or leg yielding is a lateral movement in which your horse moves forward in a diagonal direction. This may be used as a training tool for lead departures or lead changes. Begin at the walk and then go to the sitting trot and lope.

Two-Tracking Aids

Cueing for the two-track is the same as cueing for a side-pass. However, rein tension must be lighter, and you will need more leg contact to move your horse forward. You want your horse to move at an angle so more forward motion is needed. This is accomplished by holding the rein in the same positions but much lighter. Push your horse forward, as well as sideways, with your seat and leg.

Figure 66. Leg yielding. Note the horse is bent in the opposite direction of travel.



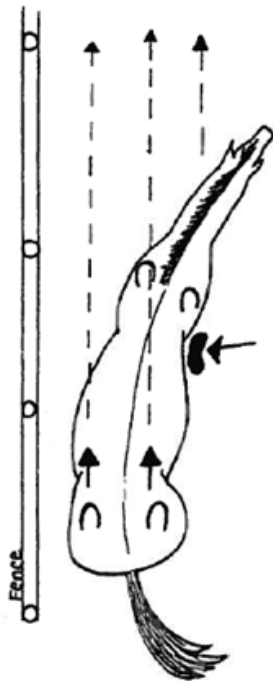


Figure 67. Shoulder in. To the right, note the leg at the girth creates the bend and pushes the horse forward.

Shoulder In

The "shoulder in" is a collecting and suppling exercise. The horse will move on three tracks (see diagram). The aids for shoulder in to the right are as follows: position the horse's forehand at approximately a 30° angle from the rail. The right leg, or inside leg, is at the girth to create the bend and keep the horse moving forward. The left leg, or outside leg, is behind the girth to prevent the quarters from swinging out to the left. The right rein, or inside hand, keeps the horse's

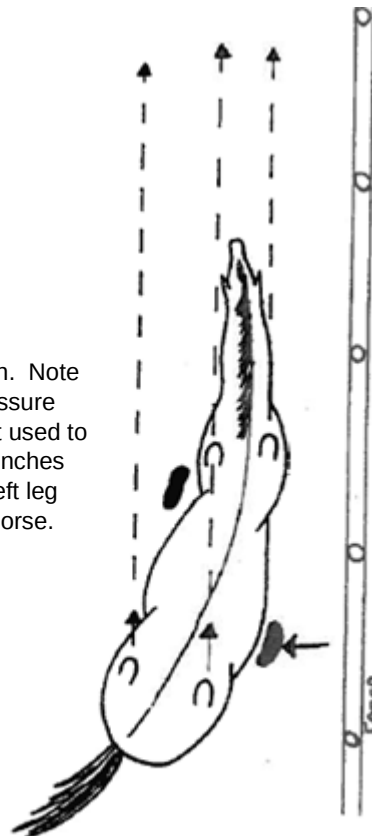
forehand to the right and maintains the degree of bend. The left hand, or outside hand, controls the pace and the degree of bend.

Travers (or Haunches In)

The travers is a collecting and suppling exercise with the forehand on the rail and the haunches moved to the inside. The travers is a three-track movement. The aids for travers to the right are as follows: the right leg, or inside leg, is at the girth to create the bend. The left leg, or outside leg, is behind the girth to move the haunches off the track to the inside. The right, or inside rein, creates the bend to the inside while the left, or outside rein, controls the degree of bend to the right.

Figure 68.

Haunches in. Note the rein pressure and the foot used to cue the haunches in and the left leg bends the horse.



ENGLISH DISCIPLINE

Saddle Seat

Basic position: Sit comfortably in the saddle. Find the horse's center of gravity by sitting with a slight bend at the knees without use of the stirrup irons. While in this position, adjust the leathers to fit. Place irons under the ball of the foot; the foot should be natural. The body should follow a vertical straight line from the shoulder through the hip to the heel.

Hands: The distance of the hands from the withers is a matter of how and where the horse carries its head. There should be a straight line from the rider's elbow, hands and reins to the horse's mouth. Hold reins according to the equipment used but use both hands to hold all reins at the same time. The bight of the reins (excess rein) should be on the right side of the horse.



Figure 69. Saddle seat

Dressage Seat

Figure 70. Dressage Seat



Basic position: The rider sits deep, erect and supple in the saddle. The rider's calves should be in contact with the horse at the girth. The stirrups should be carried on the ball of the foot with a straight line from the shoulder through the hip to the heel.

Hands: There should be a straight line from the rider's elbow, hands and reins, carried just above the withers and in front of the saddle, to the horse's mouth.

Hunt Seat

Basic position: The rider's eyes should look forward; shoulders should be back. The head should be square on the rider's shoulders, and weight should be distributed evenly over the seat bones. The rider's toes should be at an angle best suited to his/her conformation and the heels should be down; calves should be in contact with the horse slightly behind the girth. The ball of the foot should rest on the stirrup iron with a straight line formed from the shoulder through the hip to the heel.



Figure 71. Hunt seat

Hands: Hands should be over and in front of the horse's withers and saddle, with his knuckles 30 degrees inside the vertical and hands slightly apart. Reins may be held in various positions, with excess rein falling on the right side of the horse. However, all reins must be picked up at the same time. A straight line from the elbow through the hands and reins to the horse's mouth should be formed.

Position and Motion

The rider's body should be vertical when the horse is at the walk and sitting trot but inclined slightly forward when the horse is at posting trot, canter and gallop, (no more than 20 degrees in front of the vertical).

Jumping Position

The purpose of the two-point/jumping position is to adjust the rider's balance to match the horse during jumping and galloping. This allows the horse freedom of movement through his back. The rider should remember to shorten the stirrup one to two holes from the flat length. When the horse is jumping, a straight line from the rider's shoulder, knee and toes should be formed. The rider's shoulders are slightly forward, and his hips are moved slightly back, hovering over the saddle. The rider's angle closes at the hip. The rider's weight is pushed down into the lower leg and heel, with the ankle acting as a shock absorber. The eyes look forward, and the hands follow the horse's mouth while jumping.



Figure 72. Jumping position

RANCH HORSE DISCIPLINE

History of Ranching Traditions in the U.S.

Cattle came onto this continent with the pilgrims in the east and the explorers and missionaries in the southwest. In the east the cattle were kept in confined areas where feed and water were plentiful. These cattle were accustomed to being handled and stayed gentle. The Spanish in the southwest had to let their cattle and horses roam over large areas to find nourishment. Some of them escaped and became undomesticated. These wild cattle became the livestock of the ranching industry in the west.

After the Civil War, the demand for beef in the east increased. Southern soldiers, with no homes to go back to, moved west into Texas and New Mexico and became cowboys and farmers. Not having the knowledge or equipment to handle the type of cattle found there, they relied on the locals of that region to teach them. When enough of the wild cattle were gathered, they were driven north to railroads in Kansas for shipment to the east. Cattle were also moved from those regions to the northern ranges of Colorado, Wyoming, Montana, Nebraska and the Dakotas.

Along with the northern bound cattle came the cultures and traditions of the areas from where they came like the short ropes made from hemp or maguey tied to the saddle horn, and the types of bridles, bits and saddles used.

From the west, California and the Great Basin region, came the traditions of the Vaquero. They had their own methods of handling cattle and used very different equipment. Because cattle didn't move over the Rocky Mountains, those customs were slower to appear and even today are not as common as customs from the south.

Throughout the western part of our continent, large ranches were established. Huge tracts of land were claimed or gifted by the Spanish kings in Land Grants. Many of these ranches ran 5,000 to 10,000 mother cows, many them were larger, most were smaller. Some of these ranches still exist.

Working Gear

Out of necessity, ranch horse gear must be functional. Saddles must be built well enough to withstand years of the heavy work of roping cattle. They must fit a variety of horses. The better saddles are built on rawhide covered wooden trees. The design of the tree will depend on what type of work is done and the traditions of the area. The shape and size of the horn is based on the type of roping. If a rope is tied to the saddle horn, a smaller horn can be used with a medium to large size cap. Arena ropers prefer a tall horn that can be wrapped with rubber to hold dallies without slipping. Ranch ropers, using long ropes prefer larger horns with large caps that are wrapped with leather that will allow their ropes to slip. It is a matter of function.

The rigging on a saddle effects how and where it sets on the horse. Most ranch saddles are double rigged, meaning two cinches that are hobbled together. Double rigged saddles are required when showing in 4-H ranch horse classes. The position of the front cinch in relation to the seat, can vary from full to center-fire. The latigo on a full rigging set straight down from the swells and center-fire the latigo hangs down from the center of the seat. A center-fire doesn't use a back cinch. The most popular today seems to be about a 7/8 rigging.

Today a large variety of saddle pads are made. Some tend to keep a horse's back cooler than others. Fleece and wool pads seem to be better for a long, hard ride. Correct pad thickness will be determined by the width of the bars in your saddle and the build of your horse. Too much pad is as bad as too little.

Saddle seats are designed to support the rider. The typical roping saddle today, has a seat that leans the rider slightly forward, to aid in getting the rider up to rope. Most ranch saddles will have a deeper pocket that allows a person to be able to sit on their pockets with feet slightly forward of center. That position lends to all day comfort and stability when things don't go as planned.

Headstalls are made from many different materials, though the most common used by cowboys are of leather or rawhide. Nylon web is cheaper and stronger; however, it tends to chaff and lacks tradition. Styles of headstalls vary, from split or slip ear to brow band styles with throat latches. (The split and slip ear styles have been called "walk and carry" bridles by those whose horses have lost them for some reason.) Hackamores are sometimes ridden with a brow band style and a fiador. Snaffle bits are used generally with brow band headstalls with throat latches.

Bits fall into three basic categories, non-leverage, leverage and signal. Snaffle bits (non-leverage) come in a variety of mouth pieces and rings and have lots of uses. Leverage bits (curb bits), use exertion of force by means of a lever to communicate with the horse. There are as many different mouth pieces and shanks for curb bits as there are people to design them. Signal bits (spades) are the least understood. They also use a curb strap. A signal bit will have a solid mouth piece and a port high enough to reach the roof of a horse's mouth. The signal comes from the way the bit sits in the mouth. Very little movement of the hands are needed to signal the horse. These are not bits for the novice or untrained horse or rider or for the heavy or quick handed. Keep in mind, any bridle can be severe in the hands of the wrong person. It takes a lot of riding and training to gain the skills required to keep a horse soft and not damage his mouth.

Hackamores (from the Spanish jaquima) or bosals are made from a variety of materials, from rope to finally braided rawhide or hitched from horse hair. The larger diameter $\frac{3}{4}$ inch or so, are used for starting young horses. As the horse gets more well-trained, smaller diameters are used until they are down to $\frac{3}{8}$ " or $\frac{1}{4}$ " under a bridle in a two-rein outfit. The larger ones are generally ridden with a fiador and brow band headstall, the smaller (bosals) are used with a simple and plain hanger.

Reins are made from a number of materials and qualities. Split reins are mostly leather and need to be long enough and heavy enough to provide the signal needed for good communication. They are used on both leverage and non-leverage bits, and on hackamores with a fiador. Mecates, romals and roping reins are all closed reins. Mecates of horse hair or nylon, are used on snaffle bits with slobber straps or on bosals. Generally, they are from 22' to 24' in length with part of the length for the rein and the remainder used as a lead rope or "get down". When used on a bosal, the mecate should be the same diameter as the sides of the bosal. Romals consist of a closed rein and a romal (long quirt) with a popper and is always used on signal bits and at times on leverage bits. Braided romals are braided from rawhide, leather or nylon. Some romals are made from rolled or flat leather. They are sometimes ridden with rein chains. The better braided ones provide the best feel between the rider and the horse.

Reins communicate what you want to the horse. They are used to direct the head of the horse with snaffle bits and hackamores. They signal direction with curb and signal bits.

A word of caution: Tie downs, martingales, and draw reins should not be used in working ranch horse situations. They compromise the safety of both the horse and the rider on varied terrain and in roping conditions. They may be useful tools in a controlled arena situation but can also be crutches that inhibit development of good horsemanship and well-trained horses.

Training

*They gave their colts the time they needed, subtle ques and lessons heeded
Wasn't long before they gave their heart and try.
Gentle hands of give and take, trying always not to break
The spirit that would pack them till they'd die.*

Leon Flick

Ranch work is hard on horses. There was a time when ranch horses weren't started until they were at least five years old. These horses were more difficult to handle, being larger and more set in their ways, but the work they needed to do was hard and required maturity. Younger horses broke down physically if they were stressed that hard.

A good ranch horse must be able to travel well in all kinds terrain, seldom is the ground flat and smooth. They must be able to step out at all gaits and cover a lot of country including steep rocky hillsides covered in brush. They must be large enough and quick enough to catch and hold a roped cow. This horse must be able to turn fast and be sure-footed. It really helps for them to have "cow sense" and be able to stay calm in stressful situations.

The cowboy depends on his horse to get a job done. They have to trust each other enough to keep the other out of trouble.

Ranch Roping

Cowboys like to rope, and it tends to get them in trouble as loops settle on things that shouldn't be caught. There are stories of bears and bobcats, of lions and elk, of coyotes and chickens all coming into the sights of a wayward loop. Perhaps it stems from when kids get their first rope and start out on the dog and cat, the chicken and sister, the pig and mother and anything else that moves. As cowboys get older and better they seek bigger and faster targets.

Roping cattle on most ranches today is still as important as it was back in the trail herd days. There is always a cow that needs to get into a trailer or through a gate where they don't want to go. It is a skill that takes practice, lots of practice, to master, if it ever is.

Over the years, ranch ropes have been made from a variety of materials. Horse hair, hemp and maguey have been mostly replaced by nylon and polyethylene. Cotton and rawhide are still in use. Nylon and poly are strong fibers and can with- stand a lot of use and abuse.

Today's cowboy uses different ropes for different jobs. Poly and nylon find their way into the arena where speed is important. Calf and steer ropers use 28' of poly. It offers the weight, speed and strength to handle jerks of stopping a cow. Team ropers prefer a stiffer lay of nylon with head ropes of 30' and heel ropes of 35' common. The stiffer rope allows the loop to stay open when thrown fast and hard.

The average ranch rope in the United States will fall around 35'. In the rough brushy regions cowboys tend to tie off (secure the rope to the saddle horn) their ropes, about 30' of nylon is common. In more open country, where dallying (wrapping the rope around the horn) is common, ropes of 35' to 70' made of poly or nylon are used. Cotton ropes are sometimes found and if treated don't become stiff when wet. Ropes of rawhide, either twisted or braided (riata), are traditional in some areas and are still used today. They are hard to make and will break if jerked, so must be dallied on saddle horns to allow slippage. They have a lot of feel or life to them. Riatas are very fast, and it takes practice to learn how to use one. Of the man-made fibers, poly has the closest feel.

Like ropers, it takes time and practice to get a horse use to a rope. Starting out slow and never scaring the horse will get them there faster. A good ranch horse should be able to be roped on from either side, be able to drag what needs dragging and be able to hold a rope tight without a rider. It takes a skilled horseman to teach these skills.

There are four parts of a rope when a loop is built. The tail is the loose end opposite of the loop and should hang out of the way, on the left side of the horse when mounted. Next are the coils, held in the left or rein hand of the roper. The loop has two parts. The spoke is where two parts of the rope run parallel and the hondo or small loop is tied in to the end opposite of the tail. The spoke should be about one third the length of the loop.

There are at least four swings and many different shots (deliveries) with a rope. Swings are how the rope gets the momentum to reach the target when released and are also used to keep the momentum until the target is prepared for the shot. Shots are a combination of swing and release to get the rope to reach the target in the manner desired. Swings would include over-hand, back-hand, side arm and under-hand. Releases and shots include head shot, houlihand, heel trap, figure 8, back-hand hip shot, scoop loop, del viento and Blocker to name just a few. Each has its purpose, depending on direction, distance and target.

When learning how to rope, it may be better to practice how to coil the rope, then swing, release, pull your slack and dally. Before you rope anything, learn how to dally and undally. Dallying is done by holding the thump up, always up, and wrapping the rope counter clockwise around the saddle horn. You will need to know how to do this without looking at the saddle horn. Undallying is simple, just pull the rope straight up off the horn. Do not unwrap it. It is faster and safer to pull straight up. If you are just beginning, find someone to help you. Once you have gained some skill with rope from the ground then try it from your horse. If you need to dismount in a hurry, while you have a loop built, throw your rope on the ground. Do not take the chance of becoming tangled.



Roping cattle requires the roper to understand the effects of pressure on a cow and to be able to predict the movement of the cow. Yes, you must practice if you want to become skilled. When someone has a cow roped, do not ride into the area where you could become tangled in the rope. As the cow and roper move, you must move as well. Keep yourself and the roper out of trouble.

When roping, you must learn to control the slack (rope between coils and loop). If your horse steps over the slack, and the rope draws tight, your horse could panic. If you find yourself in this situation, drop your rope. This is very important. Drop your rope.

Cow Work

The person who says cows are dumb was just out-smarted by one. Working cattle takes a lot of understanding of how and why cattle react as they do. Cattle for the most part are herd animals and prey animals, meaning they move away from pressure toward others of their kind. The more threatened, the more pressure, the harder a cow will try to get away. They, like your horse, think. If you are not in the right place at the right time with the right amount of pressure, they will get away.

Working cattle is not a speed event. The faster you work, the more threatened the cow will feel and the harder she will try to get away from you. Only practice will teach you how much pressure will be enough and not too much.

Cows can see in an arc of about 330°. The only place a cow can't see, is directly behind her head. Just because a cow can't see you, doesn't mean she isn't aware of where you are and what pressure you are putting on her. Cows are sensitive. It almost seems they can feel you looking at them and will respond to the pressure of a stare. It is subtle. Most people will not recognize or understand this behavior.

Extension.org yields the following information on flight zones and balance points.

"If you are planning to move cattle, you must first understand their "flight zone." Understanding a cow's flight zone will reduce stress on the animal and reduce the likelihood of injuries to you and the animal. A cow's flight zone is like your personal space—it is the distance from an animal that a handler must maintain for the animal to feel comfortable. When a person enters the cow's flight zone, the cow will move. A dairy cow that is accustomed to human interaction on a daily basis has a smaller flight zone than a beef animal out on the range (the flight zone of such an animal might be up to 300 ft).

"Point of balance" is a factor related to flight zone and working with a cow's point of balance will also help you move a cow more safely. The point of balance is located at the cow's shoulder. To move a cow forward, you should be positioned behind its shoulder. If you need to move the animal backward, position yourself in front of the shoulder. Whether moving a cow forward or backward, work at the edge of the cow's flight zone and at angle of 45° to 60° so that you stay within the animal's field of vision."

This is good information, but handling cattle is more complicated. Every person reacts with cattle in their own way. The person's intensity, attitude, body language, etc. all have an effect. How you stand, where you stand, the direction you look all contribute to where and how a cow will move.

When working a cow from a herd, you must pay attention to the body language of the cow. The cow's eyes, ears and body arc will give an idea of where he is wanting to go. If a cow looks or steps to the left, you need to step into of his line of sight to stop him from going that direction. Watching the tail will allow you to go where the cow wants to go. It's the end with two brown eyes that indicates where you need to be.

A good horse will “read” a cow far better than people can. The rider needs to understand this and trust his horse to make the correct decisions. Not all horses can do this. It is instinct in some horses, and others never do understand it. If you want to get good here, you must work at it.

Ranch Trail, the Class

In Ranch Horse Trail Class, your horse should move out as he would if he had to get somewhere. There is large number of potential obstacles, like water boxes, gates, log drags, bridges, trot overs, etc.

The ranch horse should be attentive to the obstacle but should not be scared of it. Just because your ranch horse will cross a creek, swim a river and wade out in a lake, doesn't mean he will put a foot in a water box. Sometimes it takes a lot of work to get a horse to cross a water box. You must be patient. The more the horse is forced, the more difficult the training will become.

A rider must be able to move all the body parts of a horse to manage opening, closing and going through gates. There are several different ways to work a gate, right and left hands, pushes and pulls. The rider must not get frustrated while training a horse to work a gate. It takes time to get a horse in the correct position and be able to move around a gate without bumping it. When learning how, work a gate in parts. Ride up to where the latch is at your knee, stop, pet your horse and let him be still, ride away and do it again. Repeat this part until your horse is comfortable standing at the gate. Then go on to unlatch and relatch the gate, wait, repeat. Keep adding parts of the whole movement until your horse will slowly ride through the gate and close the gate in one smooth effort.



Log drags can be a problem. You must know how to dally and undally a rope before attempting to drag a log. If your horse has not done this before, you should ask for help. Horses don't like things that follow them, if they are not used to it. If your horse gets scared while dragging a log, undally and drop the rope, don't wait until something bad happens. Some horses will drag on the right but not the left, some the other way. Some horses will try to turn and look at what is behind them, becoming tangled in the rope. This reaction could lead to a wreck. When dragging a log, there is a lot going on and you need to pay attention. You need to know where your horse is going and where the log is positioned.

Ground tying a horse is an extremely useful skill. Horses that have been taught to lead well, tend to follow the dismounted rider. Horses that have been allowed to drag a lead shank around are hard to train. There are many ways to train a horse to do ground tie. Don't start to train a horse to do this with your bridle. He will step on your reins and either break them or hurt his sensitive mouth. Use a halter. Walk your horse forward and stop. Without turning, back your horse up one step, drop the shank and walk off. If your horse moves his foot, back him up without touching him or the lead shank. Repeat this until you can walk two or three steps away from him. Turn, walk back to him and pet him. Let him know that he did what you wanted. Repeat and build on this until you can walk 10 feet away, and all the way around him. Do not get mad at him if it takes lots of work. He will learn to do this when he figures out what you want.

Like everything else in life, the more you work at it, the better you and your horse will get.



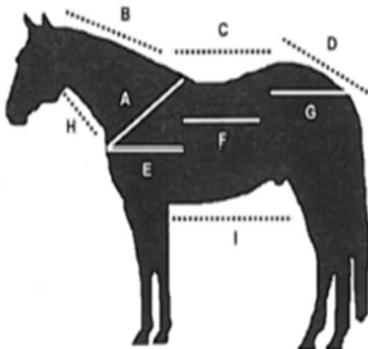
HORSE JUDGING

A horse with good conformation is well-balanced, muscled, and structurally correct. To use and care for your horse properly, you must understand conformation and how it affects function, soundness, health and terminology. You can apply this information to formal show ring judging. Judging is an attempt to identify the horse that most closely resembles what is considered the industry ideal. When evaluating conformation, there are four major considerations:

- **Balance**

A balanced horse appears symmetrical with all parts blending together nicely. Imagine a horse in the center of the teeter totter: the board should stay level, equally heavy in the front half as in the back half. The overall appearance of the horse should be that of all parts of the body are in correct proportion resulting in a pleasing, balanced appearance.

Balance and Proportions:



- **A** Angle of the shoulder should be approximately 45 degrees
- **B > H** Top of neck approximately two times the length as the bottom
- **C < I** Length of back should be shorter than length of underline

- **B = C = D** Approximately equal length of Neck back and Hip

- **E = F = G** Body is Proportional

- **Structural correctness**

Straightness and correctness of limbs. See Figures 24, 25, 26 and 27.

- **Breed and sex characteristics (Quality)**

A horse should look like the breed it represents. Mares should be feminine in appearance; stallions should be masculine in physical development. The gelding should display some masculine characteristics with refinement. Quality refers to a horse that exhibits many of the ideal characteristics of a specific breed and refers to a horse that is correct in structure and refined through the head and ears.

- **Muscling**

A horse should be well-muscled, with a fairly wide, deep and full chest. The forearm and gaskin should be well-muscled, and it should have deep shoulders and a short, strong, muscular back. The croup should be long, level, and well-muscled with deep and heavily muscled rear quarters.

4-H Judging

In 4-H, you can participate on a horse judging team and judge both halter and performance horse classes. Ask your Colorado State University Extension County Agent how to become a member of a local team.

Halter

Horses are judged on balance and quality, muscling, structural correctness, and breed and sex characteristics.

Performance

Horses are shown in classes such as western pleasure, horsemanship, western riding, reining, trail, hunter under saddle, hunter hack, and equitation. Each class is placed by the ability of the rider and horse and the way the horse moves. When judging performance, be familiar with the rules of each class and, if applicable, how they are scored.

In a contest, you may judge two to four halter classes and four to eight performance classes. Classes consist of four horses. Each member is scored on how he or she placed that class. Two to six classes will be selected by officials for contestants to give *reasons*. *Reasons* are verbal explanations on why you placed the class as you did. Your reasons should:

- be accurate
- emphasize major differences
- include correct terms when describing the class
- flow in organized sequence

Your delivery of reasons should be accurate, organized and well spoken. Your coach can help you reach this level of skill.

COLORADO 4-H ADVANCEMENT LEVELS

*Please note that the following are recommendations and guidelines from the Colorado State 4-H Horse Advisory Committee (HAC), however, individual county rules and regulations may vary.

A county may elect to impose more stringent rules than the state, however a county may not have rules that are less stringent than the current state rules.

Background of the Program:

The Advancement Levels program is a logical step-by-step guide to teach youth horsemanship and horse care. The Advancement Level chapter in the 4-H Horse Member's Manual serves as a leader's and member's guide. This chapter explains the basics of the Level's program.

Safety and proper basics are stressed throughout the Levels program. The skills learned in the beginning levels are reflected in properly mastering the more advanced levels. A solid and consistent foundation is extremely important.

It should be recognized that not every youth will want to master all levels. However, it should be realized that the first two levels teach the basics of horse safety, care and riding for general pleasure and performance. It is therefore encouraged that all members participate in at least Levels I and II. Level III is for the serious horse person and Level IV is for the youth that is interested in a career in the equine industry or is very serious about his/her riding and training.

Passing the Level II test is required by Colorado State Fair to show in the Colorado 4-H Horse Show for showmanship, horsemanship, timed events, equitation, control, trail and cattle classes.

Purpose:

The Advancement Level program is a teaching guide which combines many aspects of horsemanship and horse care.

The 4-H levels program is designed to apply to Western, Ranch Horse and all disciplines within the English division (Hunter Seat, Saddle Seat and Dressage Seat).

Reference materials for the Advancement Level Program include:

1. 4-H Horse Project Members Manual (MA1500)
2. Colorado State 4-H Horse Rule Book (LA1500)
3. The Horse (2nd edition), by Evans, Borton, Hintz and Van Vleck
4. United States Equestrian Federation Rulebook, usef.org

Equine Disciplines available through the Colorado 4-H Horse Program:

1. **English:**

- Level I - Novice
- Level II - Intermediate

Hunter Seat:

- o Level III - Performer
- o Level IV - Horsemaster

Dressage Seat:

- o Level III - Performer
- o Level IV - Horsemaster

Saddle Seat:

- o Level III - Performer
- o Level IV – Horsemaster

2. **Western (4-H members move through levels starting at level 1 and continue through each level):**

- Level I - Novice
- Level II - Intermediate
- Level III - Performer
- Level IV - Horsemaster

3. **Ranch Horse (4-H members move through levels starting at level 1 and continue through each level):**

- Level I - Novice
- Level II - Intermediate
- Level III - Performer
- Level IV - Horsemaster

4. **Showmanship: Levels I, II, III & IV**

Showmanship Levels were designed for the 4-H Horse member that is not able to ride for whatever reason, or for members who really enjoy Showmanship. Showmanship rating tests are available for each level and may be administered with the levels riding tests or separately from them. The showmanship levels test is available on the equine extension website.

- Levels I through IV

*Please note that Showmanship cards are not mandatory for State Fair.

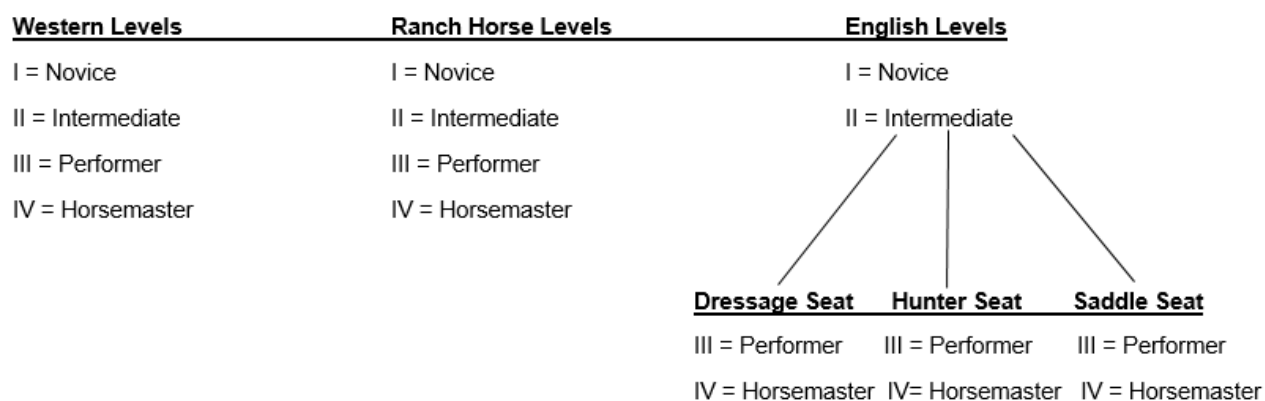
Process for members to advance through the Levels Program:

1. Complete and pass the written test(s) in chronological order (I, II, III & IV).
2. Complete and pass the riding test(s) in chronological order.

Every member must begin with Level I in any discipline. In other words, a member cannot begin at Level III western even though they “ride really, really well”.

Members may progress through all disciplines if so desired, however, a member cannot laterally move across the levels.

For example- A member completes English I & II, Hunter Seat III, and then wants to test for Dressage Seat IV. In order to test for Dressage Seat IV, the rider must have completed English I & II, and then Dressage Seat III before they can test for Dressage Seat IV.



Levels Testing:

Standardized written and riding tests have been developed for all Levels and copies should be on file at each Extension Office.

Members may take written and/or riding tests as many times as necessary to advance. Test administrators may wish to rotate between Test A and Test B at Levels I and II, if a member must take the written test a second or third time.

Please note that the length of time completed written and riding tests are kept on file as well as the method of storing and disposing of tests is up to the discretion of the local Extension Office.

Each Level requires the member to pass the written and riding test. A member must pass the written test with a score of 80% or better. The member must also pass the riding test with the 80% or better on each of the riding test maneuvers and requirements.

Members will use their ID'd project horse for Levels testing. See “Hardship Definitions” for more details.

WRITTEN TESTS

1. Agents and/or appointed assistants (Horse Leaders) by the Extension Office administer and grade the written tests.
 - a. The Level I Written test may be administered outside of the County Extension office under the strict guidelines of the Agent/ Extension Office.
 - b. Levels II, III, & IV written tests must be administered under Extension Personnel supervision.
2. Please note that the written tests are not discipline specific and are based on broad range, general equine knowledge.
 - a. There are four written tests; Levels I, II, III & IV, with each level progressively requiring more knowledge of the horse project.
3. The State Horse Advisory Committee recommends that the written tests be taken and passed prior to the administration of the riding test, however, it is not mandatory, and the riding test may be given prior to the written test, at all levels.
 - a. It should be noted that each County may have separate rules regarding this matter so be sure to inquire with your County Office.
 - b. Some County offices allow a member to re-take a failed written test as soon as the next business day while others require a 48-hour hold. The HAC recommends a 48-hour holding period.
4. Members are encouraged to review their tests after the examination but are not permitted to retain a copy. All test records will be kept at the Extension office.
5. The written test for each Level is identical for English, Western, and Ranch Horse. Therefore, it is not necessary for the 4-H member to retake the written test once he/she has passed it for a specific Level.
6. Written Test Study guides are available online at: <http://co4h.colostate.edu/>

Preparing for the Riding Tests:

Copies of the riding tests can be found at: <http://co4h.colostate.edu/>

Print a copy of the test you want to take and practice, practice, practice each of the elements of the test. Your 4-H leader should assist so that you know you are doing these elements correctly. Just because you could do it once, doesn't mean you can do it again, especially when you are under the pressure of being tested. If you are taking level III and IV tests, look up all the answers to the oral questions. Go over them several times. Practice answering the questions out loud to another person. Keep in mind, preparation is the key to success.

RIDING TESTS

1. Agents (preferably those with a confident working knowledge of equestrian activities) and Leaders are permitted to test members for Level I riding tests.
2. Riding tests levels II, III & IV must be administered by a State Certified Rater.
 - a. Testing fees should not exceed \$15.00 per test & appropriate government mileage rates.
3. It is recommended that any Level II tests are administered by a Rater NOT associated with the member's club or with a rater who has no personal or professional contact with the member being rated.
4. It is also recommended that any Level III & IV tests be administered by a rater from outside of the member's county.
5. An oral interview is part of the riding test for Level III & IV.
 - a. It is conducted before or after the riding test.
 - b. ALL oral questions on the level III and IV tests should be administered and the member must score a minimum of 80% on each item.
 - c. Reminder, the oral questions are available on the CSU Equine Extension website, as they are part of the riding test and may be studied ahead of the time the member is tested.
 - d. If the member passes the riding test but not the interview, he/she will not receive a passing score and must reschedule the oral interview.
6. The rater will submit a copy of the riding test to the member's local Extension office, where upon a member and/or the member's club leader may request to have a copy for their records as well.
7. *Riding tests are accessible through each Extension Office or online at: <http://co4h.colostate.edu/program-areas/horse-resources/levels-testing/> under the "Advancement Levels" tab.

Hardship Definitions for Level Testing on a non- 4-H ID'd horse

The 4-H program is about youth development. The intent of permitting a youth to use a substitute horse is to allow youth an opportunity to still pursue excellence, knowledge and higher horsemanship skills, even when their project horse is not useable.

Criteria that must be met for a 4-H Member to be eligible for substituting a horse for the purpose of taking an advancement level test:

- ✓ 4-H member must be 16 years or older.
- ✓ Substitution is only an option for an individual wishing to pass level IV, regardless of discipline.
- ✓ A member's horse must have had training close to being able to pass level IV, prior to the death or injury of the horse. A 4-H leader or parent must be willing to validate this.
- ✓ The 4-H member must provide a veterinarian's statement on the physical inability of the horse to perform the required maneuvers, injury acquired or death certificate for the horse.
- ✓ All aspects of the level test must be passed with the same standards as if it were the member's own horse being used. The owner of the horse may not assist the member in any manner during the level test. It is recommended that the member practice with the substitute horse on several occasions, prior to taking the level test.

APPENDIX 1: TERMS & DEFINITION

Action

The way a horse travels and moves.

Aids, Artificial

Spurs, whips, martingales and so forth.

Amniotic Sac

The protective membrane a foal grows in while inside the mare

Antibodies

Substances in the horse's body made to fight disease

Antiseptic

A substance which prevents infections

Appointments

Equipment and clothing used in showing horses.

Artificial gaits

Taught rather than natural includes the running, walk, slow, gait, rack and in some instances, the pace. All are modification of the walk.

Artificial Insemination (AI)

Breeding of a mare by a trained technician using a method that is not natural service.

Artificial Insemination Technician

A person trained to preform artificial insemination of mares.

Balance

Refers to the overall appearance of the horse. All parts of the body are in correct proportion to each other and result in a pleasing, balanced appearance.

Bearing Rein

Rein pushed against the neck in direction of the turn, neck rein

Bits

The bit is the most important part of the bridle; the chief use of the other parts of the bridle is to hold the bit in place in the horse's mouth.

The bit provides communication between the rider or driver and the horse.

Bloom

A condition of the hair and coat. They are clean, healthy and fine-textured with distinct, clear shine and healthy appearance.

Bosal (boh-zal)

Noseband of the hackamore, usually made of braided rawhide.

Bowed tendon

An inflammation and enlargement of the flexor tendon at the back of the cannon (most often on the front legs)

Brace bandages

Resilient bandages on the leg of horses worn in some cases to support lame legs, and worn in other cases, to protect a horse from cutting and skinning its leg while racing.

Brand

A mark of identification. A private registered mark burned, frozen or tattooed on the horse.

Buck-kneed

Knees bent forward also called "over at the knees"

By or sired by

The male parent of a horse

Calf-Kneed

Opposite of buck-kneed, Knees angled backward also called "back at the knees"

Cast

To lie down or roll close to a wall so it is impossible or difficult to get up without assistance

Catch rope

Working rope or lariat

Cavesson

A noseband on a bridle

Coarse

Used to express a lack of quality or a rough, harsh appearance

Coggins test

An agar gel-immunal diffusion test to determine equine infectious anemia (known as swamp fever)

Colic

Various conditions of the digestive tract in which abdominal pain is the chief symptom

Collected

Controlled gait, a correct, coordinated action

Colostrum

The first milk produced by the mare, full of nutrition and antibodies

Colt

A young male horse under four years of age

Conformation

The build of a horse—the structure, form and symmetrical arrangements of parts

Contracted heels

Occurs most often in the fore feet, characterized by a drawing or contracting of the heels

Cribbing

Biting or setting teeth against the manger or some other object, arching the neck and gulping or swallowing air into the stomach, not the lungs

Crossbreed

The result of breeding two different breeds of horse to produce an individual that possesses the characteristic of both breeds

Cryptorchid

A male horse whose testicles have not descended into the scrotum

Dam

Female parent of a horse

Dental star

A star-shaped or circle-like structure near the center of the wearing surface of the permanent incisors

Direct rein

Using one hand on each rein with a snaffle bit or bosal, teaching the horse to turn and give to the pressure caused by the pull of the rein

Disunited or Cross firing

When a horse is on the right front lead and left hind lead at the same time or vice versa

Dressage

Exercise and training that develops the physique and ability of the horse

Estrous Cycle

A reproductive cycle when a mare will be receptive to breeding, ready and able to reproduce

Estrus

A part of the estrous cycle when a mare will show signs of her willingness to mate with a stallion

Equine

Of or pertaining to horse

Equitation

Art of riding horseback

Farrier

A horseshoer

Filly

A young female horse under four years old

Float teeth

Filing off the sharp edges of a horse's teeth

Foal

A young horse of either sex up to yearling age

Foaling

The act of giving birth to a live foal

Founder

See laminitis

Gait

Describes a specific foot fall pattern or beat, i.e., walk, trot, canter

Gallop

A four-beat gait resembling the canter, but the diagonal pair breaks, creating four beats and is more ground covering than the canter

Gelding

An altered or castrated male horse

Gestation

The number of days a mare is pregnant with a foal, starting with the first day she is bred and ending when she foals

Grooming

Removal of dirt and other irritants from the horse; massages muscles

Gymkhana

A program of competitive games on horseback

Hackamore

A type of western headstall or bridle without a bit, commonly used in breaking horses and teaching them to neck rein

Hand

The unit by which the height of a horse is measured; a hand equals four inches

Hand gallop

The hand gallop is a little bit more forward than a canter, but still maintaining the three beats

Handler

A person who has control of a horse by means of a halter and lead.

Handy

Describes a horse that moves quickly and willingly, always in control of its movements in a balanced, rhythmic, alert manner

Headstall

Part of a bridle or hackamore that fits over the horse's head

Heaves

Pulmonary emphysema-a condition in which the lungs do not work efficiently; reduced elastic recoil reduces the amount of air that can be forced out of the lungs; a "heave line" may develop due to this condition.

Hinny

Cross between a jenny and a stallion

Hobbles

Straps fastened to the front legs of a horse to prevent the horse from straying

Honda

Eye on the working end of a lariat or riata through which the rope passes to form a loop or noose

Immunity

The ability of a horse's body to fight off disease causing organisms like a virus or bacteria

Jack

Male donkey

Junior horse

Any horse five years old or younger

Laminitis

(Also known as founder) Noninfectious inflammation of the sensitive laminae of one or more of the hooves

Lead

In canter or lope, the horse is on the right or left lead as indicated by the inside or leading foreleg; also, the third beat in the stride

Long Day Breeder

Animals who respond to the amount of light they get each day and will only breed when daylight hours are longest in the spring and summer.

Lunge

A long line, about 20 to 30 feet, used to train and exercise a horse

Mare

A mature female horse four years of age and older

Martingales

Two types: *standing* and *running*—the martingale prevents the elevation of the horse's head beyond a certain level without cramping the horse; the *standing martingale* consists of a strap which extends from around the girth, between the forelegs, to the noseband; the *running martingale* is not attached to the horse's head, but terminates in two rings through which the reins pass; it permits more freedom of movement than the standing martingale

Mecate

A hackamore rein and lead rope; also called a McCarty rein

Meconium

The first bowel movement of a foal after they are born.

Monkey mouth

Opposite or parrot mouth, the lower jaw protrudes in front of the upper jaw

Mule

A cross between a mare and a jack

Natural gaits

Walk, trot, canter and gallop and, in some horses, pace and running walk

Natural Service

A mare and a stallion are brought to the same location such as a farm, ranch or professional breeding facility and can breed naturally.

Near side

The horse's left side

Neck rein

A signal to the horse with the weight of the rein against the neck

Off side or far side

The horse's right side

Open class

A show class in which any horse of a specified breed may compete

Out of dam, or dam of

Refers to the female parent of a horse

Out of sire, or sire of

Refers to the male parent of a horse

Parasite

A small organism that lives on or in and at the expense of a larger organism called the host

Parrot mouth

Opposite of monkey mouth, the upper jaw overhangs the lower jaw; the incisors do not properly meet and cause uneven wear and growth.

Parturition

The act of giving birth

Piebald

The black and white coat color of the Pinto horse

Placenta

The protective membrane the foal lived in while developing and growing in the mare

Posting

The rising and lowering of a rider with the rhythm of the trot

Purebred

Bred from members of a recognized breed without mixture of blood from other breeds

Quality

Fineness of feature, fine hair and lack of coarseness

Rein chains

Light weight chains attached from the bit to the rein; used to counter balance the weight of the spade bit

Reins

The reins afford direct contact between the hands and horse's mouth; they regulate impulsion: slowing, stopping or backing the

horse; the reins, acting through the mouth and the neck, are also used to change direction of travel or to turn the horse to either the right or left.

Riata

Braided rawhide rope

Ribbon colors in 4-H

First place-blue; second-red; third-white; fourth-pink; fifth-yellow; sixth-green; seventh-purple; eighth-brown

Roached

A mane that has been cut short

Roached back

A convex back, one that forms an outward arc

Roller

A surcingle, or form of girth, used to hold a blanket in place

Romal

A braided rawhide terminated in a single or double tapered strap, usually between 3 and 4 feet long, and attached to the end of closed, braided rawhide reins

Saddlebred

Breed originated in the United States; developed as an easy-riding, general purpose horse historically for plantation use; used today as a show horse; can be three-or-five gaited

Seasonal Breeder

A seasonal breeder is an animal who can only reproduce during certain seasons or times of the year.

Seat and hands

A term that refers to the ability of a rider to sit in the saddle with grace and control the mount

Senior horse

Any horse six years old or older

Short-coupled

Describes a horse having a short distance (not more than four-fingers width) between the last rib and the point of the hip

Sire

Male parent of horse

Skewbald

Coat color other than black, such as bay, brown or chestnut, combined with white of the Pinto horse

Slicker

A raincoat made of oiled canvas or plastic

Slobber chains

Light-weight chains attached between the shanks or a curb bit or straps. Sometimes it is a solid metal bar called a slobber bar

Smooth mouth

Refers to the smooth, biting surface of the upper and lower teeth after the cups have disappeared at 11-12 years of age

Sound

A term that means the horse is physically fit and shows no signs of weakness or illness which interfere with its usefulness

Split ear headstall

A western headstall with a slot for only one ear to go through

Spoon

The port mouthpiece of exerting pressure on the mouth which rises from the center of the mouthpiece of a curb bit, much like the port of the Weymouth curb bit; the spoon may vary from less than an inch to two or more inches in length

Stallion

A mature, uncastrated male

Stud

Refers to a horse-breeding farm or ranch; corrupted in common usage to mean stallion

Stylish

To have a pleasing, graceful, alert general appearance

Suppleness

The ability of the horse to bend and flex its entire body

Sway-back

A concave or sagging back that forms an inward arc

Tack

Riding equipment or gear for the horse such as saddle, bridle, halter, and so forth

Tapaderos/taps

Leather covering or shield over the front of the stirrups

Teasing

Presenting a mare in estrus to a stallion to observe her reactions and willingness to breed with the stallion.

Thrush

A disease of the frog in which a black discharge and foul smell are emitted.

Type

The arrangement of body parts into distinct recognizable patterns. All horses have the same basic conformation, but each breed has distinct conformation types that make it differ from other breeds.

Ultrasound Scanner

A medical machine that uses sound waves to produce a picture, to see if the mare is in estrus.

Umbilical Cord

A tissue that connected the foal to the mare during gestation.

Vice

A bad habit that may affect a horse's usefulness, dependability or health

War bridle

An emergency bridle made of rope for use in leading unruly horses

Warm-blood

Results of crossing heavy horses (cold bloods) with thoroughbreds or Arabians (hot bloods) and mainly used for pulling carriages. Today used in dressage, show jumping and events.

Weanling

A foal, colt or filly under one year old that has been taken away from its mother that is no longer nursing

Wolf teeth

Small, peg-like horse teeth, which sit just in front of the first cheek teeth of horses and other equids. They are vestigial first premolars and the first cheek tooth is referred to as the second premolar even when wolf teeth are not present.

Yearling

A foal that is between the ages of one and two years. A foal is considered one year of age on January 1, regardless of what month of the year it was born.

APPENDIX II: BREED ASSOCIATIONS

Akhal Teke Registry of America

21314 129th Avenue, SE
Snohomish, WA
98296 (425) 870-9789
Akhal-teke.org

American Connemara Pony Society

P.O. Box 100
Middlebrook, VA 24459
acps.org

The American Donkey and Mule Society, Inc.

P.O. Box 1210
Lewisville, TX 75067
lovelongears.com

American Hackney Horse Soc.

4059 Iron Works Parkway, Suite 3
Lexington, KY 40511-8462
(859) 255-8694
FAX (859) 255-0177
hackneysociety.com

American Hanoverian Society

4067 Iron Works Parkway
Lexington, KY 40511
(859) 255-4141; FAX: (859) 255-8467
hanoverian.org

The American Holsteiner Horse Association

25195 SW Parkway Ave. Ste. 201
Wilsonville, OR 97070
(503) 570-7779; FAX: (503) 570-7781
holsteiner.com

The American Indian Horse Registry

9028 State Park Road
Lockhart, TX 78644-4310
(941) 543-5252; FAX (941) 543-2489
indianhorse.com

American Miniature Horse Association, Inc.

5601 South IH 35 W
Alvarado, TX 76009
(817) 783-5600; FAX (817) 783-6403
amha.org

American Morgan Horse Association, Inc.

4066 Shelburne Road Suite 5
Shelburne, VT 05482-0960
(802) 985-4944
morganhorse.com

American Mustang and Burro Association

P.O. Box 27703
Salt Lake City, UT 84127-0703
ambainc.net

American Paint Horse Association

P.O. Box 961023
Fort Worth, TX 76161-0023
(817) 834-APHA; FAX (817) 834-3152
apha.com

American Quarter Horse Association

1600 Quarter Horse Drive
Amarillo, TX 79104
(806) 376-4811; FAX: (806) 349-6411
aqha.com

American Saddlebred Horse Association

4083 Iron Works Parkway
Lexington, KY 40511-8434
(859) 59-2742; FAX (859) 259-1628
asha.net

American Shetland Pony Club

81-B E. Queenwood Road
Morton, IL 61550
(309) 263-4044; FAX (309) 263-5113
shetlandminiature.com

American Shire Horse Association

P.O. Box 300
LeRoy, MI 49655
(888) 302-6643
shirehorse.org

American Suffolk Horse Association

4240 Goehring Road
Ledbetter, TX 78946-5004
(979) 249-5795
suffolkpunch.com

American Warmblood Registry, Inc.

P.O. Box 1332
DeLeon Springs, FL 32130
(561) 693-5516; FAX: (775) 667-0516
americanwarmblood.com

Appaloosa Horse Club, Inc.

2720 W. Pullman Rd.
Moscow, ID 83843
(208) 882-5578
FAX: (208) 882-8150
appaloosa.com

Arabian Horse Association

10805 E. Bethany Drive
Aurora, CO 80014
(303) 696-4500
FAX: (303) 696-4599
arabianhorses.org

Cleveland Bay Horse Society of North America

P.O. Box 483
Goshen, NH 03752
(730) 401-4054
clevelandbay.com

Clydesdale Breeders of the U.S.A.

17346 Kelley Rd. Pecatonica, IL 61063
(815) 247-8780; FAX (815) 247-8337
clydesusa.com

The Foundation Quarter Horse Registry

P.O. Box 165
Vicksburg, MI 49097
(269) 649-1106; FAX (269) 649-1560
fqhr.net

The Friesian Horse Association of North America

4037 Ironworks Parkway, Suite 160
Lexington, KY 40511
(859) 455-7430
fhana.com

Gypsy Vanner Horse Society

P.O. Box 219
Morrison, FL 32668
(888) 520-9777
vanners.org

Haflinger Registry of North America

P.O. Box 2690
Akron, OH 44309
(330) 784-0000
FAX (330) 794-5721
haflingerhorse.com

Icelandic Horse Association of America

P.O. Box 1724
Santa Ynez, CA 93460
(866) 929-0009
icelandics.org

International Andalusian and Lusitano Horse Association

101 Carnoustie N. #200
Birmingham, AL 35242
(205) 995-8900
ialha.org

International Buckskin Horse Association

P.O. Box 268
Shelby, IN 46377-0268
(219) 552-1013
ibha.net

International Sporthorse Registry and Oldenburg Registry North America

517 DeKalb Avenue
Sycamore, IL 60178
(815) 899-7823; FAX: (815) 899-7823
isroldenburg.org

The Jockey Club

821 Corporate Drive
Lexington, KY 40503
(859) 224-2700; FAX (859) 224-2710
jockeyclub.com

Lipizzan Association of North America

C/O Andrea Iannuzzi
133 Seabury Drive
Bar Harbor, ME 04609
lipizzan.org

Missouri Fox Trotting Horse Breed Association, Inc.

P.O. Box 1027
Ava, MO 65608-1027
(417) 683-2468; FAX (417) 683-6144
mfthba.com

National Foundation Quarter Horse Association

P.O. Box 129
Levan, UT 84639
(541) 426-4403; FAX (541) 426-4206
nfqha.com

National Show Horse Registry

2242 Polo Park Drive
Dayton, OH 45439
(937) 962-4336
nshregistry.org

North American Department of the Royal Dutch Warmblood Studbook of the Netherlands

4037 Iron Works Parkway, Suite 140
Lexington, KY 40511
(859) 225-5331; FAX: (859) 554-0366
kwpn-na.org

North American Peruvian Paso Horse Association

P.O. Box 2187
Santa Rosa, CA 95405
(707) 544-5807
napha.net

North American Shagya-Arabian Society

9797 S. Rangeline Road
Clinton, IN 47842
(765) 665-3851
shagya.net
<http://www.astralite.com/www/lipizzan>

Norwegian Fjord Horse Registry

1801 W. County Road 4
Berthoud, CO 80513
(303) 684-6466; FAX (888) 646-5613
nfhr.com

Palomino Horse Breeders of America

15253 East Skelly Drive
Tulsa, OK 74116
(918) 438-1234; FAX (918) 438-1232
palominohba.com

Paso Fino Horse Assoc., Inc.

4067 Iron Works Parkway
Lexington, KY 40511
(859) 825-6000; FAX (859) 258-2125
pfha.org

Percheron Horse Association of America

P.O. Box 141
Fredricktown, OH 43019-0141
(740) 694-3602; FAX: (740) 694-3604
percheronhorse.org

Pinto Horse Association of America, Inc.

7330 NW 23rd Street
Bethany, OK 73008
(405) 491-0111; FAX (405) 787-0773
pinto.org

Pony of the Americas Club, Inc.

3828 South Emerson Avenue
Indianapolis, IN 46203
(317) 788-0107; FAX (317) 788-8974
poac.org

Racking Horse Breeders Association of America

67 Horse Center Road, Suite B
Decatur, AL 35603
(256) 353-7225; FAX (256) 353-7266
rackinghorse.com

Rocky Mountain Horse Association

71 South Main Street
Winchester, KY 40391
(859) 644-5244
rmhorse.com

Tennessee Walking Horse Breeders' and Exhibitors' Association

P.O. Box 286
Lewisburg, TN 37091-0286
(931) 359-1574; FAX (931) 359-4530
twhbea.com

United States Lipizzan Federation

P.O. Box 310
Creswell, OR 97426
(503) 589-3172
uslipizzan.org

United States Trotting Association

6130 S. Sunbury Road
Westerville, OH 43081
(877) 800-USTA; FAX (614) 224-2291
ustrotting.com

Walking Horse Owners' Association of America

P.O. Box 4007
Murfreesboro, TN 37129
(615) 494-8822
walkinghorseowners.com

Welsh Pony and Cob Society of America, Inc.

720 Green Street
Stephens City, VA 22655
(540) 868-PONY
wpcsa.org

APPENDIX III: BALANCE YOUR HORSE'S FEED

Ration Balancing

How to Balance the Diet for Protein for your 4-H Horse Project

Balancing your horse's diet can be a tedious and overwhelming task. Most commercially prepared grain mixes and pelleted feeds have already been balanced for you by a trained nutritionist, this helps take the guess-work out of this critical aspect of owning a horse. For the purpose of understanding how all components of the diet contribute to the total nutrient intake of your horse, we will focus on how to balance for **one** nutrient, protein! To balance for all of the nutrients (to include vitamins and minerals) at the same time takes a very sophisticated ration balancing software program and advanced training in nutrition, which is not necessary for you to know how to do for your 4-H project. The steps outlined below should help simplify the math involved for balancing for protein. Seniors can also use these steps to assist with the ration balancing section of the 4-H record book.

Step 1: Identify all of the feedstuffs (hay, pasture, grain mixes, pellets, supplements, etc.) that you offer your horse on a daily basis (if there are special supplements that you offer your horse only occasionally, then it is not necessary to include them in this exercise).

Examples of a typical horse feed tag and a vitamin/mineral supplement are shown below. Note that ingredients listed on feed tags are always reported on an as-fed basis, unless otherwise noted. You can assume that most commercial feeds are 89-90% Dry-Matter (DM).

Figure 1. Example of a horse feed tag.

BRAND X HORSE FLAKES		
FOR ADULT WORKING AND BREEDING HORSES		
GUARANTEED ANALYSIS		
Crude Protein	(Min)	12 %
Lysine	(Min)	0.5 %
Crude Fat	(Min)	4.0 %
Crude Fiber	(Max)	9 %
Calcium	(Min)	0.5 %
Calcium	(Max)	1.0 %
Phosphorus	(Min)	0.6 %
Salt	(Min)	0.25 %
Salt	(Max)	0.75 %
Zinc	(Min)	145 ppm
Copper	(Min)	45 ppm
Selenium	(Min)	0.4 ppm
Vitamin A	(Min)	3,800 IU/lb
Vitamin E	(Min)	56 IU/lb
INGREDIENTS		
Crimped Oats, Flaked Corn, Chopped Corn, Wheat Midds, Corn Chop, Molasses, Cottonseed Meal, Soybean Meal, Distillers Dried Grains, Monocalcium Phosphate, Calcium Carbonate, Cane Molasses, Soybean Oil, Salt, Saccharomyces cerevisiae (Yeast Culture), Vitamin B12 Supplement, Riboflavin Supplement, D-Calcium Pantothenate, Niacin, Choline Chloride, Menadione Sodium Bisulfite Complex (source of Vitamin K), Pyridoxine Hydrochloride, Thiamine Mononitrate, Folic Acid, D-Biotin, Natural Mixed Tocopherols, Amorphous Silicon Dioxide, Citric Acid, Rosemary Extract, Vitamin E Supplement, Biotin, Zinc Proteinate, Manganese Proteinate, Copper Proteinate, Yeast Fermentation Solubles, Zinc Sulfate, Sodium Selenite, Brewer's Dried Yeast, Dried Saccharomyces cerevisiae Fermentation Solubles, Hydrated Sodium Calcium Aluminosilicate, Silicon Dioxide, Hydrated Flavoring, Yucca schottigera Plant Extract, Dried Lactobacillus acidophilus Fermentation Product, Dried Bacillus subtilis Fermentation Extract, Vitamin A Supplement, Copper Sulfate, Propionic Acid, Vitamin D Supplement.		

Figure 2. Example of a vitamin/mineral supplement tag.

BRAND X HORSE		
VITAMIN & MINERAL SUPPLEMENT		
FOR ALL CLASSES OF HORSES		
GUARANTEED ANALYSIS		
Calcium	(Min)	10.0 %
Calcium	(Max)	11.0 %
Phosphorus	(Min)	11 %
Salt	(Min)	10 %
Salt	(Max)	11 %
Potassium	(Min)	1.0 %
Magnesium	(Min)	1.0 %
Zinc	(Min)	3,900 ppm
(Chelated zinc)	(Min)	700 ppm
Manganese	(Min)	3,900 ppm
(Chelated manganese)	(Min)	700 ppm
Copper	(Min)	1,300 ppm
(Chelated copper)	(Min)	200 ppm
Iodine	(Min)	30 ppm
Selenium	(Min)	10 ppm
(Organic selenium)	(Min)	2 ppm
Cobalt	(Min)	5 ppm
Vitamin A	(Min)	100,000 IU/lb
Vitamin D	(Min)	18,000 IU/lb
Vitamin E	(Min)	500 IU/lb
Biotin	(Min)	5 mg/lb
INGREDIENTS		
Monocalcium Phosphate, Processed Grain By-Products, Salt, Calcium Carbonate, Cane Molasses, Magnesium Oxide, Potassium Chloride, Manganese Sulfate, Zinc Sulfate, Soybean Oil, Sodium Selenite, Manganese Proteinate, Vitamin E Supplement, Copper Sulfate, Copper Proteinate, Zinc Proteinate, Saccharomyces cerevisiae (Yeast Culture), Selenium Yeast, Brewer's Dried Yeast, Biotin, Flavoring, Ethylenediamine Dihydrochloride, Vitamin D Supplement, Vitamin A Supplement.		

FEEDING DIRECTIONS

Offer free choice at all times in areas where horses graze, drink and rest. Adult horses should consume approximately 3 ounces/head/day. Weanlings and yearlings should consume 1-1.5 ounces/head/day. Consumption can be controlled by number and location of mineral feeders. Limit feed upon initial introduction.

Figure 3. An example of a typical forage analysis on grass hay is shown below.

Note: You can get your pasture or hay tested for a small fee (~\$16-26/sample). There are many forage labs to choose from; to get an analysis like the one below, you can contact the lab directly (www.equi-analytical.com) for assistance on how to appropriately submit a sample. Most labs will provide both an As-Fed (As-Sampled) value and a Dry-Matter (DM) value on their report, just as this one does:

Results				
% Moisture	7.3			
% Dry Matter	92.7			
	As Sampled		Dry Matter	
Digestible Energy (DE), Mcal/lb	.92		.99	
	%	g/lb.	%	g/lb.
Crude Protein	12.3	55.9	13.3	60.2
Estimated Lysine	.43	1.9	.46	2.1
Acid Detergent Fiber (ADF)	31.5	142.9	34.0	154.1
Neutral Detergent Fiber (NDF)	54.9	249.1	59.2	268.6
WSC (Water Sol. Carbs.)	12.2	55.4	13.2	59.7
ESC (Simple Sugars)	7.1	32.1	7.6	34.7
Starch	1.0	4.4	1.1	4.8
Non Fiber Carb. (NFC)	17.0	77.0	18.3	83.1
	%	g/lb.	%	g/lb.
Calcium	.48	2.19	.52	2.36
Phosphorus	.20	.93	.22	1.00
% Nitrate	.05		.05	
PPM Nitrate-Nitrogen	109		117	
	As Fed		100% Dry	
RFV			98	

If you don't have a lab analysis available for your hay or pasture, you can use the chart below for common types of hay and pasture in the High Plains and Rocky Mountain Region.

Table 1. Nutrients of common types of hay and pasture.¹

Type of Roughage	% Dry Matter	% Crude Protein	% Calcium	% Phosphorus
Pasture				
Irrigated grass	20.0	15.0	0.26	0.15
Dryland grass	20.0	10.5	0.26	0.15
Hay				
Alfalfa	91.0	17.0	1.39	0.24
Grass/Alfalfa Mix	85.3	18.4	1.04	0.32
Crested Wheatgrass	92.0	9.0	0.26	0.15
Mixed Meadow Hay	90.0	13.40	0.35	0.14
Orchardgrass	90.6	8.40	0.38	0.22
Timothy	89.0	9.70	0.48	0.23

¹Values in this chart are reported on a dry-matter (DM) basis and are derived from the Nutrient Requirements of Horses (NRC, 2007) and the Nutrient Requirements of Beef Cattle (NRC, 2000).

Step 2: Indicate how many pounds (lbs) of each of the feedstuffs (referred to as “ingredients” in your record book) that you are feeding your horse on a daily basis. For hay, grain mixes, and pelleted feed, weigh the amount that you currently feed your horse on a scale (note that not all scoops and containers are the same size and not all feed has the same density, so be sure to measure each type of feed individually), and then fill out the blanks below. For pasture, you can estimate the amount your horse eats based on your horse’s body weight (the average horse will consume ~1.5-2% of their body weight per day in pasture or hay-based roughage).

Example: Weight of horse (1,000 lbs) x 1.5%: $1,000 \times 0.015 = 15 \text{ lbs}$ of hay or pasture

Table 2. Amount of feedstuffs fed to your horse on a daily basis.¹

Feedstuffs (Ingredients):	Pounds Fed Daily:
<i>Ex: Brand X Horse Flakes</i>	<i>5 lbs</i>
<i>Ex: Brand X Horse Vitamin & Mineral Supplement</i>	<i>3 oz = 0.1875 lbs¹</i>
<i>Ex: Grass Hay (Analysis shown on Figure 3)</i>	<i>15 lbs</i>

¹See the appendix in the back of this chapter for mathematical weight conversions.

Step 3: Determine how many grams of protein your horse is getting on a dry-matter (DM) basis from the diet you are currently feeding. Be sure to include all sources of hay, pasture, grain, and supplements that you offer your horse on a regular basis. The reason that feedstuffs need to be converted to a DM basis is two-fold: first, because NRC requirements are indicated on a DM-basis (shown in Table 6, below), and because water dilutes the nutrient density of feedstuffs, so it needs to be removed. For example, think of 1 tablespoon of powdered milk replacer compared to 1 tablespoon of powdered milk replacer mixed with a cup of water. The powder is much more concentrated compared to the one added with water. In that example, the dry powder is what we actually need to use for insuring that we are meeting the animal’s dietary needs.

Example: Below is an example of how to do the math for “Brand X Horse Flakes” (the tag is shown above).

$$\frac{\text{Brand X Horse Flakes}}{\text{Name of Feedstuff}^1} \left(\frac{5 \text{ lbs}}{\text{Lbs per day}^1} \times \frac{12\%}{\% \text{ Protein}^2} \right) / 100 = \frac{0.6 \text{ lbs}}{\text{Lbs of Protein per day (as-fed)}}$$

$$\left(\frac{0.6 \text{ lbs}}{\text{Lbs of Protein per Day}} \times \frac{89\%}{\% \text{ DM of Feedstuff}^3} \right) / 100 = \frac{0.534 \text{ lbs}}{\text{Lbs of Protein per day (DM)}}$$

$$\frac{0.534 \text{ lbs}}{\text{Lbs of Protein per day (DM)}} \times 454 \text{ grams} = \frac{242 \text{ grams}}{\text{Grams of Protein per day (DM)}}$$

¹Feedstuff and amount daily amount fed is indicated on Table 2.

²For horse feed and supplements see the manufacture’s tag to obtain the amount of protein, examples are show on Figures 1 and 2. Note that vitamin and mineral supplements are typically not a source of protein, which is why protein is not listed on a vitamin/mineral supplement tag.

³For horse feed and supplements, you can assume 89% DM. For hay or pasture, use DM values indicated on Table 1. Otherwise, if you have gotten a lab analysis performed on your hay or pasture, the DM will be indicated on the lab results report as shown on Figure 3.

Use this worksheet to calculate the daily amount of protein provided by each feedstuff that you have indicated on Table 2. If you need additional worksheets, make copies of this page.

Feedstuff #1:

$$\frac{\text{Name of Feedstuff}^1}{\text{Lbs per day}} \times \frac{\text{\% Protein}}{100} = \frac{\text{Lbs of Protein per day (as-fed)}}{100}$$

$$\frac{\text{Lbs of Protein per Day}}{\text{\%DM of Feedstuff}} \times 100 = \frac{\text{Lbs of Protein per day (DM)}}{100}$$

$$\frac{\text{Lbs of Protein per day (DM)}}{100} \times 454 \text{ grams} = \frac{\text{Grams of Protein per day (DM)}}{100}$$

Feedstuff #2:

$$\frac{\text{Name of Feedstuff}^1}{\text{Lbs per day}} \times \frac{\text{\% Protein}}{100} = \frac{\text{Lbs of Protein per day (as-fed)}}{100}$$

$$\frac{\text{Lbs of Protein per Day}}{\text{\%DM of Feedstuff}} \times 100 = \frac{\text{Lbs of Protein per day (DM)}}{100}$$

$$\frac{\text{Lbs of Protein per day (DM)}}{100} \times 454 \text{ grams} = \frac{\text{Grams of Protein per day (DM)}}{100}$$

Feedstuff #3:

$$\frac{\text{Name of Feedstuff}^1}{\text{Lbs per day}} \times \frac{\text{\% Protein}}{100} = \frac{\text{Lbs of Protein per day (as-fed)}}{100}$$

$$\frac{\text{Lbs of Protein per Day}}{\text{\%DM of Feedstuff}} \times 100 = \frac{\text{Lbs of Protein per day (DM)}}{100}$$

$$\frac{\text{Lbs of Protein per day (DM)}}{100} \times 454 \text{ grams} = \frac{\text{Grams of Protein per day (DM)}}{100}$$

Step 4: Add all of the grams of protein from each feedstuff together from Step 3. Once added together, this will determine the total amount (in grams) of protein that your horse is getting per day on a dry-matter basis.

Table 3. Amount of protein fed to your horse daily.

Feedstuffs (Ingredients):	Grams of Protein per day:
<i>Ex: Brand X Horse Flakes</i>	<i>242 grams</i>
<i>Ex: Brand X Horse Vitamin & Mineral Supplement</i>	<i>None provided</i>
<i>Ex: Grass Hay (Analysis shown on Figure 3)</i>	<i>905 grams</i>

Total Grams of Protein = _____

*Add together all grams of protein provided by your feedstuffs.

Example Total = 1,147 grams of protein per day

Step 5: Determine what the daily protein requirement is for your horse using Table 6, and then fill in the blanks on Step 6, below. You will need to determine which category best describes your horse, to do so, read the footnotes below the chart for definitions for each of the exercise workload categories.

Table 6. Daily Minimum Nutrient Requirements of Horses¹

Type of Horse	DE (Mcal)	Crude Protein (grams)	Calcium (grams)	Phosphorus (grams)
880 lb Adult, no work ²	12.1	432	16	11.2
880 lb Adult, Light work ²	16.0	559	24	14.4
880 lb Adult, Moderate work ²	18.6	614	28	16.8
880 lb Adult, Heavy work ²	21.3	689	32	23.2
880 lb Adult, Very Heavy work ²	27.6	804	32	23.2
1,100 lb Adult, no work ²	15.2	540	20	14.0
1,100 lb Adult, light work ²	20.0	699	30	18.0
1,100 lb Adult, Moderate work ²	23.3	768	35	21.0
1,100 lb Adult, Heavy work ²	26.6	862	40	29.0
1,100 lb Adult, Very Heavy work ²	34.5	1004	40	29.0

¹Values in this chart are reported on a dry-matter (DM) basis and are derived from the Nutrient Requirements of Horses (NRC, 2007). See the appendix in the back for more detailed NRC recommendations of nutrients for 1,100 lb (500 kg) horses, to include foals, pregnant and lactating mares, and stallions.

²Weekly workloads for no work, light, moderate, heavy and very heavy exercise categories are defined as follows: "no work" = sedentary / no exercise, "light work" = 1-3 hours/week, "moderate work" = 3-5 hours/week, "heavy work" = 4-5 hours/week, and "very heavy work" = 6-12 hours/week.

Step 6: Using Table 6, indicate your horse's minimum protein requirement, on a dry-matter basis, by filling in the fields below. You will have to choose the category that is closest to your horse's actual weight.

Age of Horse Weight of Horse Hours of Exercise per Week Minimum grams of Protein Needed Daily (DM)

Step 7: Compare the total amount of protein that you are currently providing in your horse's diet (from Step 4) to the amount needed (determined in Step 6). Then, answer the questions that follow.

_____	versus	_____
Amount of protein provided, daily, in the diet. Indicate the number of grams, on a dry-matter basis, that you calculated from Step 4 (Table 3).		Minimum amount of protein needed, daily, in the diet. Indicate the number of grams, on a dry-matter basis, that you determined your horse needs from Step 6 (Table 6).

Questions:

1. Does the diet you are currently feeding your horse meet the minimum protein needs of your horse?
☐ Yes. If yes, skip to question #3.
☐ No. If not, answer question #2 and skip question #3.
2. If you are not meeting the minimum protein needs of your horse, how many additional grams do you need to provide (subtract grams of protein needed from grams of protein provided)?

Recommendations: If the amount is more than ¼ lb (or ~110 grams), then you may need to increase the amount of feed or supplements that you are offering on a daily basis or change to a type of hay that has a higher protein content. You may want to consult your local extension agent, veterinarian, or a reputable nutritionist for more specific guidance.

3. If you are exceeding your horse's protein needs, how many additional grams are you offering (subtract grams of protein provided from grams of protein needed)?

Recommendations: Note that the NRC recommendations indicated on Table 6 are minimum amounts needed and not necessarily "optimum" amounts. Therefore, exceeding those amounts is not a bad thing. However, if the amount of protein you are offering exceeds the minimum requirement by more than a ½ lb (or ~225 grams), then you may be able to reduce the amount of feed or supplements that you are offering on a daily basis or change to a type of hay that has less protein. You may want to consult your local extension agent, veterinarian, or a reputable nutritionist for more specific guidance.

REFERENCES

NRC. 2007. Nutrient Requirements of Horses. 6th rev. ed. Nat'l. Acad. Press, Washington, DC.

NRC. 2000. Nutrient Requirements of Beef Cattle. 7th rev. ed. Nat'l. Acad. Press. Washington, DC.

Appendix I: Mathematical weight conversions needed for math in this chapter.

1 pound (lb) = 0.454 kilograms (kg)

1 pound (lb) = 454 grams (g)

1 pound (lb) = 16 ounces (oz)

1 kilogram (kg) = 2.2 pounds (lb)

1 kilogram (kg) = 1,000 grams (g)

1 gram (g) = 0.0022 pounds (lb)

1 ounce (oz) = 0.0625 pounds (lb)

Table 5: Daily Nutrient Requirement of Horses (Mature body weight of 500 kg/1,100 lb.)^a as documented by the National Research Council (found on page 52)