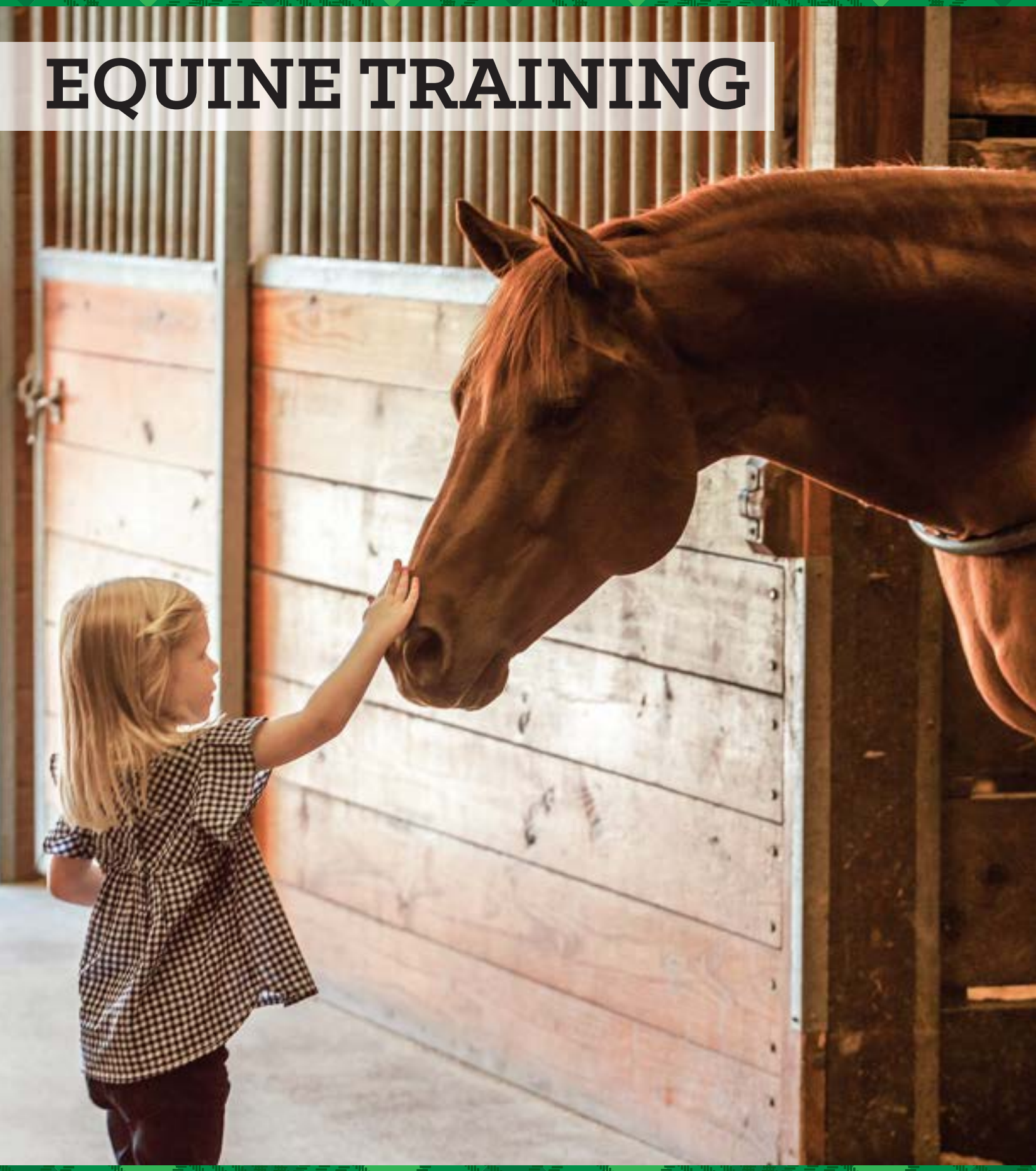
Nutrena®
What's inside counts.™

EQUINE TRAINING



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CONTENT FOR EQUINE TRAINING

EQUINE TERMINOLOGY & LIFE STAGES

TIMEFRAME

- MATURITY - Horses reach maturity at approximately 3-5 years
- GESTATION - 11 months is the period of time a mare is pregnant
- LIFESPAN - Average lifespan is approximately 25-30 years
- SENIOR - Horses are considered seniors at approximately 15-18 years of age, but nutritional needs vary by individual.
- EQUINE TERMINOLOGY & LIFE STAGES

ADULT HORSES

- MARE - Adult female horse
- GELDING - Castrated adult male horse
- STALLION - Uncastrated adult male horse
- PONY - A full-grown small horse (14.2 hands and under)

YOUNG HORSES

- FOAL - A newborn baby horse (before weaning)
- WEANLING - A colt or filly who is 6 to 12 months old
- YEARLING - A colt or filly who is between 1 and 2 years old
- COLT - Male horse or pony under 2 years of age
- FILLY - Female horse under 2 years of age

THE HORSE'S BODY

- TOPLINE - The muscles along the horses neck, back and croup
- CONFORMATION - The shape of a horse's body. A horse with good conformation is stronger and more likely to stay sound than one with weak conformation.
- SOUND - A "sound horse" does not have any injuries that interfere with his performance and/or health
- HAND - Measures how tall a horse is (one hand = four inches)
- LAME - A "lame horse" has an injury that interferes with his performance and/or health
- POINTS - This word is used when describing the color of a horse. The "points" of a horse are his mane, tail, lower legs and the tips of his ears.
- GAIT - The different speeds a horse can travel. Most horses has 4 natural "gaits", the (1) walk (2) trot (3) canter (4) gallop

OTHER VOCABULARY

- WEANING - The gradual process of separating a foal from its mother
- TACK - All equipment used on a horse (bridle, saddle, halter, etc.)
- LUNGING - A way of exercising a horse, using a lunge line that is attached to the horse's halter. The horse moves in circles around the trainer, who stands in the middle holding the lunge line - a very long rope (about 20-40 feet) used to lunge a horse

COMMON AMERICAN BREEDS

Arabian

- Noted as a horse with an unmatched reputation for endurance
- Stands 14.1 to 15.1 hands at the withers & weighs 800 to 1,000 lbs
- Triangular-shaped head that is small and dished, a chiseled appearance, with wide-set eyes and a small muzzle
- When the horse walks or trots, the tail often arches above the croup level. The neck is also set high on the shoulder and is long and arched, blending into a short back.
- Preferred Arabian colors are bay, chestnut, gray and black.

The Thoroughbred

- This horse was developed primarily for speed, and used as race horses, jumpers, hunters, polo ponies, as well as for pleasure riding
- Judged by their speed, not their size, so they literally do come in all shapes and sizes
- Many Thoroughbreds have a long forearm and gaskin, they may also have a long area from the hip to the hock.
- The Jockey Club records color only for purposes of identification. They use the categories of black, dark bay or brown, bay, chestnut, gray, and roan.

The Warmblood

- A sport horse, used commonly as hunters, jumpers and dressage horses.
- Can include many specific breeds such as Trakhener, Holstiener, Hanoverian, Dutch Warmblood, Selle Francais, and others
- Known for their athletic ability, good size and level head

The American Quarter Horse

- Quarter Horses were the first breed developed in the United States, named for their burst of speed running short distances. The most common race distance is a quarter mile - hence, the name.
- The traditional Quarter Horse is a short-coupled cow horse, with muscular front and rear ends.
- Other Quarter Horses have been bred with thoroughbreds to produce a Quarter Horse built for greater speed.
- Color in Quarter Horses is purely a matter of personal preference, with many colors recognized for registration. Excessive white markings, as defined by AQHA, may cause restricted or ineligible registration. However, if an animal has markings or spots that indicated American Albino, Appa-loosa, Paint or Pinto breeding, they are not eligible for Quarter Horse registration.

The American Saddlebred

- Originated in the Bluegrass section of the United States where it was bred as a general-purpose horse noted for its easy gait. It is mainly used today for horse shows and pleasure riding.
- The American Saddlebred has a controlled but flashy gait. The breed may be either three-gaited or five-gaited. It carries its head high, and its tail is often at a distinctive set. Three-gaited horses show at the walk, trot and canter. Five gaited horses show at the walk, trot, canter, slow gait and rack.
- Colors can be chestnut, bay, black, brown, gray or roan. However, most breeders prefer the dark colors. White spotting is generally avoided.

COMMON AMERICAN BREEDS

The Fox Trotting Horse

- Originating in the Ozarks of Missouri and Arkansas, the Fox Trotting Horse was bred to travel long distances with a comfortable gait at 5 to 8 miles per hour. Today these horses are often used for pleasure riding, especially cross-country trail riding.
- The horse is known particularly for its gait, the fox trot. It provides the rider with a very soft ride. This gait is the major requirement for registration in the Missouri Fox Trotting Horse Breed Association.
- The body type most preferred is somewhere between the American Saddlebred and the Quar-ter Horse. Breeders also like a long, flowing tail and full mane.
- Palominos, blacks, sorrels, and blue and red roans are the most desirable, but all colors are common.

The Pasos

- The Paso is a light-horse breed noted for its smooth natural gait—the paso. The Paso Fino was imported originally from Puerto Rico and Columbia, and the Peruvian Paso from Peru.
- The gait of the Paso is a broken pace, but one in which the jarring is largely eliminated.
- Paso Finos are acceptable in all solid colors and roans, plus buckskin, creme, spotted and palo-mino patterns. The Peruvian Paso Horse Registry of North America does not register pintos, whites or cremellos.

The Standardbred

- Once called the American Trotting Horse. Its name came from the fact that in the nineteenth century, horses were registered who trotted or paced the mile in less than the "standard" time. The most famous Standardbred pacer in history was Dan Patch.
- The only measure of the Standardbred is speed. The standard range of height is from 14.2 to 16.2 hands. The weight of a horse in racing condition is usually 850 to 1,150 pounds. Traditional-ly, breeders have favored horses whose length exceeded their height.
- Predominant color for the Standardbred is bay. However, Standardbred can be found in gray, chestnut, black and brown. Once again, performance is much more important than color.

The Appaloosa

- Descendants of Spanish horses brought to Mexico around 1600
- The name came from a slurring of the Palouse River country in the northwestern U.S.
- The Appaloosa was bred by the Nez Perce´tribe for sure-footedness in mountain travel.
- The Appaloosa's eye is generally encircled with white, like the human eye. The mane and tail of many Appaloosas are quite sparse. Their skin is mottled with shades of black and white. This is particularly noticeable around the nostrils. Their hooves are also striped vertically in black and white.

The Morgan Horse

- The Morgan Horse is popular horse for both pleasure riding and show.
- Usually stands from 14.1 to 15.1 hands high, and weighs between 1000 to 1200 pounds
- Noted for their refined head and raised tail when they are moving
- All colors are acceptable in the American Morgan Horse Association, with the exception of white or spotted horses or horses with Appaloosa patterns. The Morgan has more black chestnut or dark liver-colored horses than any other breed.

COMMON AMERICAN BREEDS

The Tennessee Walking Horse

- Originating, predictably, in Tennessee, the Tennessee Walking Horse was bred for farm work, as well as riding and driving. Recently, it has achieved popularity as a show horse.
- The Tennessee Walking Horse is a breed that performs a running walk naturally. A good show horse of this breed places its back hoof 18" – 36" ahead of his fore hoof's print.
- These horses come in all solid colors; roan and gray are fully acceptable. White markings are quite common. Currently the blacks and the dark colors are most popular.

Paint, Pinto and Spotted Horses

- These terms all refer to horses with body spots. (The term "pinto" comes from a Spanish term meaning "painted or spotted.") The English terms piebald and skewbald are also sometimes used.
- Two different terms are used to refer to the patterns on these horses. Overo is basically col-ored with white spots. Tobiano is basically white with colored spots. The ideal for both types of spots is to be approximately equal parts colored and white.
- Paints will generally have Quarter Horse background, Pintos may include Saddlebred, Half-Arabian and other backgrounds. (Paint shown here)

Palomino

- The Palomino is a horse that is registered solely according to color. Palominos in the U.S. were introduced from Spain by Cortez and the earliest Spanish explorers. The uses of palominos are widely varied: pleasure horse, parade horse, racing, harness classes, trotting and pacing, and three-gaited and five-gaited classes.
- Color is the Palomino's most distinctive characteristic. The color is close to that of a U.S. gold coin, and the tail and mane are white or nearly white. Note: Because of the genetic intricacies involved, palominos cannot breed full palominos mating among themselves. They are best produced by mating a chestnut with a cremello.

The Shetland

- Shetland ponies were developed in the Scotland's Shetland Islands, only 350 miles from the Arctic Circle. Because of their strength and small size, they were used to work mines in Eng-land. In America, they have come to be known often as a small children's pony.
- The maximum height for a Shetland is 11.2 hands. (Other ponies can be as tall as 14 hands.)
- Many have a shaggy, furry coat developed to withstand the Shetland's rugged winters. Howev-er, types in America today vary greatly. Many show ponies resemble scaled-down Saddlebreds.
- Shetland ponies come in all colors, with chestnut, bay, dark brown and black being most pre-dominant. Silver dapple (a dappled chestnut with a silver or white mane and tail) is unique to the Shetland.

The Pony of the Americas

- The Pony of the Americas is the result of mating between a Shetland pony stallion and an Ap-paloosa mare. The Pony of the Americas (POA) is a western type of pony that is small enough for children to ride, yet large enough for adults to break and train.
- Range from 46 to 56 inches in height.
- Their ideal appearance is basically a cross between an Arabian and a Quarter Horse in minia-ture. They have a Appaloosa color pattern. They are required to have a white sclera. However, it does not have to encircle the eye.

COMMON AMERICAN BREEDS

The Draft Breeds

- All imported from Europe, the draft breeds were used mostly as farming, heavy-carriage, or draft horses. The draft breeds are almost all large and heavily muscled. They stand about 16 to 17 hands high, and generally weigh between 1,600 and 2,200 pounds. The following five breeds are most common in the U.S: Percheron, Belgian, Clydesdale, Shire, Suffolk. (Clydesdale shown here)

Buckskins

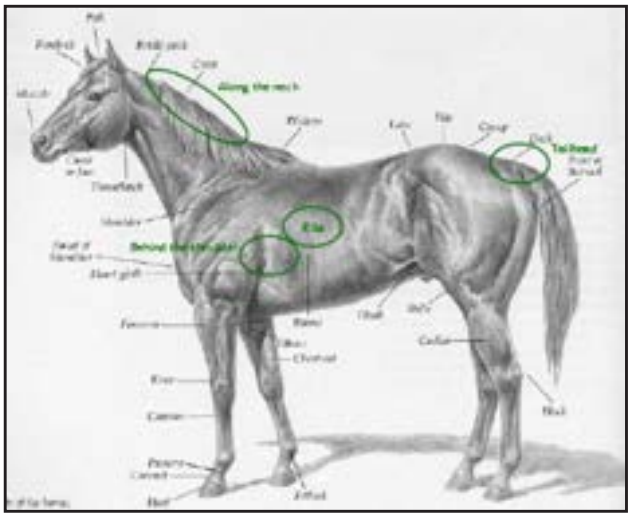
- Many Buckskins originate from breeding in Spain, but the Buckskin pattern can appear in most breeds. Buckskins are determined entirely by the shade of their coat.
- Buckskins are mostly a shade of yellow, from gold to nearly brown. Their mane, tail and legs are black or dark brown. A dun is a lighter shade of Buckskin.

The Long Ears

- The ass is a close relative of the horse.
- Males are called jacks and females are called jennets. Asses generally have smaller hooves, longer ears, sparser mane, and a more cowlike tail.
- A donkey is a small ass.
- Some of the most common breeds of asses include: The American, Mammoth, or Standard Jack and Jennet — These animals were originally bred specifically for crossing with mares to produce mules. Most Jacks are dark or red sorrel, with white points. (American Mammoth Jack shown here)

BODY CONDITION SCORING

This numerical condition scoring system, developed by Henneke et al, provides a consistent measure of the degree of body fat in horses of various breeds and sizes. Scoring is based on visual appraisal and handling (particularly in scoring horses with long hair) of horses. Conformation differences between breeds or types do not affect scoring when all criteria are applied. Muscle tone should not be confused with fatness. Scores can be assigned in half-point increments.



SCORE	DESCRIPTION
1	**Poor:** Emaciated. Spinous processes, ribs, tailhead and hooks and pins projecting prominently. Bone structure of withers, shoulders and neck easily noticeable. No fatty tissues can be felt.
2	**Very thin:** Animal emaciated. Slight fat covering over base of spinous processes, transverse processes of lumbar vertebrae feel rounded. Spinous processes, ribs, tailhead and hooks and pins prominent. Withers, shoulders and neck structures faintly discernible.
3	**Thin:** Fat build-up about halfway on spinous processes, transverse processes cannot be felt. Slight fat cover over ribs. Spinous processes and ribs easily discernible. Tailhead prominent, but individual vertebrae cannot be visually identified. Hook bones appear rounded, but easily discernible. Pin bones not distinguishable. Withers, shoulders and neck accentuated.
4	**Moderately thin:** Negative crease along back. Faint outline of ribs discernible. Tailhead prominence depends on confor-mation, fat can be felt around it. Hook bones not discernible. Withers, shoulders and neck not obviously thin.
5	**Moderate: Back level.** Ribs cannot be visually distinguished but can be easily felt. Fat around tailhead begin-ning to feel spon-gy. Withers appear rounded over spinous processes. Shoulders and neck blend smoothly into body.
6	**Moderate to fleshy:** May have a slight crease down back. Fat over ribs feels spongy. Fat around tailhead feels soft. Fat begin-ning to be deposited 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 tail-head is soft. Fat deposited along withers, behind shoulders and along the neck.
8	**Fat:** Crease down back. Difficult to feel ribs. Fat around tailhead very soft. Area along withers 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. Patch 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.

1.Henneke, D.R., G.D. Potter, J.L. Kreider and B.F. Yeates. 1983

BODY CONDITION SCORING

The ideal Body Condition Score (BCS) is between 5 - 6

BODY SCORE 1

BODY SCORE 4

BODY SCORE 2

BODY SCORE 4.5

BODY SCORE 3

BODY SCORE 5

BODY CONDITION SCORING

The ideal Body Condition Score (BCS) is between 5 - 6

BODY SCORE 6

BODY SCORE 8

BODY SCORE 7

BODY SCORE 9

TOPLINE EVALUATION SCORING

A Topline Evaluation Score (TES) will evaluate your horse's muscle development. The muscles over the back, loin and croup are the best indicators, and easiest to identify, of the horses' muscle status. Those muscles affect the horses' ability to elevate, lengthen, stop, turn, and drive forward. The TES is a 'visual' and a 'hands-on' appraisal of the horses' topline muscles. The three areas to evaluate include:

- The back area
- The loin area
- The croup area

The TES uses the 'A' through 'D' grading scale, with an 'A' showing 'ideal' over-all muscling and a 'D' showing muscle atrophy in all three of the areas that make up their topline.

Topline Evaluation is an indicator of the amino acids in a horses' diet and if they are in adequate supply or are they 'balanced' or not. Amino Acids are the building blocks that make up crude protein. Muscles contain 73% protein and the first limiting amino acid will determine how much 'all' of the other amino acids in their diet can be utilized.

In performance horses: A TES Score of 'B-' or below may have a negative effect on the horses' ability to perform very long, because their stamina will be reduced, while it increases muscle soreness. A score of 'C' or 'D' may also decrease their bone density and tendon strength depending on how long this deficient diet was fed. There are amino acid to mineral ratios that must be maintained in their 'total diet' for 'optimal absorption and utilization of both.

In young growing horses: A TES Score of B- or below can predispose them to Developmental Orthopedic Disease (DOD). Dr. Ed Ott, from the Univ. of Florida, published his work showing how a 'protein deficient' diet fed to young, growing horses affected both, the 'quality' of bone formed and the 'strength' of their tendons and ligaments.

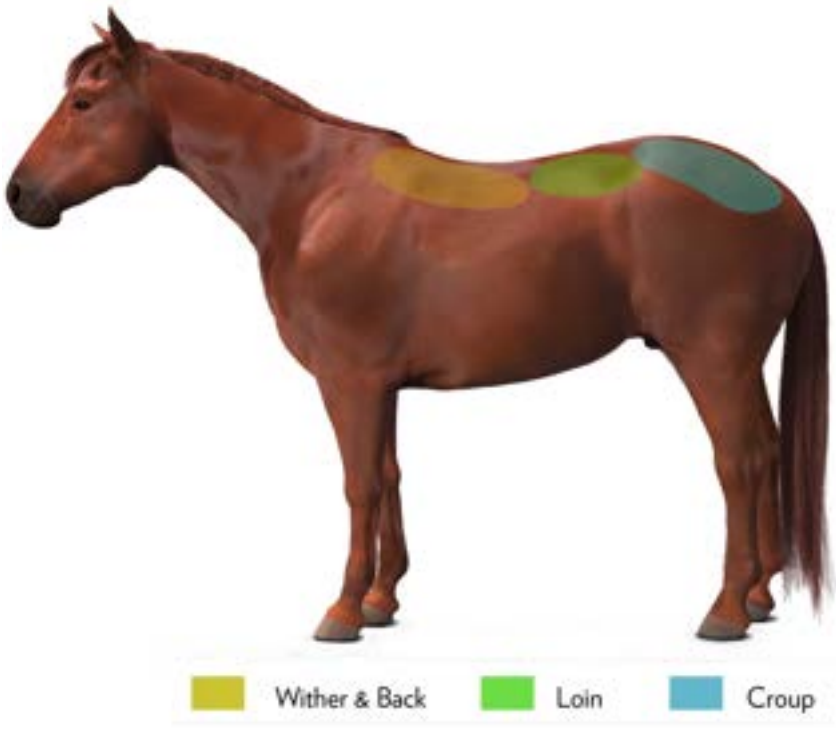
Realizing the first place they lose muscle, when a deficient diet is fed, is in their back area; the second is their loin; and third is their croup area. Realizing the easiest place to first visualize muscle loss on the horse is in their back area. If their muscles continue to atrophy, it would then be seen through the loin and then the croup area. Once the horses diet is 'balanced', it usually takes 30 days to improve 'one' grade of their TES.

Grade A- The horse has 'ideal muscle development". The back, loin and croup are full and well rounded. The topline muscles are well developed and blend smoothly into his ribs. The horse should be able to perform work requiring the use of all of these muscles.

Grade B- The 'back area is concave' (sunken), between the vertebrae and the top of the ribs:
1. You may have trouble fitting this horse with a saddle.
2. The muscle atrophy in this area may cause back soreness when worked.
3. Soreness can negatively impact their attitude and performance.
4. The loin muscles are well developed and are the same height as the spinal processes, i.e. you cannot see or palpate the spinal processes.

Grade C-The 'back and loin areas are concave' (sunken), between the vertebrae and the ribs:
1. The 'spinal processes' in the loin area are higher than the muscles beside them and can easily be seen and palpated.
2. The atrophied muscles in the back/loin areas weaken the horse.
3. The length of time they are able to work and perform will be compromised, causing them to tire easily.
4. Muscling over the croup and hindquarters are well developed and rounded.

Grade D-The entire topline is concave (sunken), including the back, loin and croup areas:
1. The croup appears pointed at the top since the vertebrae and hip bones are higher than the muscles in-between them.
2. In severely affected horses, the width of their stifle is narrower than the width of their point of hip.
3. This horse will lack the strength and stamina to perform and the muscle atrophy will cause discomfort when worked.



TOPLNE BALANCE™

Nutrena's Unique Approach to Topline Health

What is topline and why does it matter?

A horses's topline - the muscles that support the spine, from neck to hindquarters - plays an important role in how a horse performs, looks and feels. While exercise, saddle fit, genetics and age are most frequently blamed for a poor topline, nutrition actually plays the most critical role. Nutrena is placing this concept at the forefront of our suite of nutrition solutions, so that your horse can benefit from having the healthiest topline possible.

Topline Balance™ is Nutrena's unique approach to topline health. You can find these feeds that will support topline health by identifying the Topline Balance™ logo on the following feeds:

SafeChoice® Horse Feeds
ProForce® Horse Feeds
Empower® Toplinr Balance™ Ration Balancer

In addition, specific Progressive Nutrition® products also include the Topline Balance™ solution.

www.toplinebalance.com is the website to take our topline assessment.

WEIGHING YOUR HORSE WITHOUT A SCALE

Knowing your horses' weight is important for such tasks as determining feeding rates, deworming, and dosage of other medi-cations. Few people have access to a scale, and the typical heart girth weight tape can easily be off by up to 150 pounds or more. Here is a simple formula involving two measurements on the horse, taken in inches, which can be used to generate a very accurate weight predication.

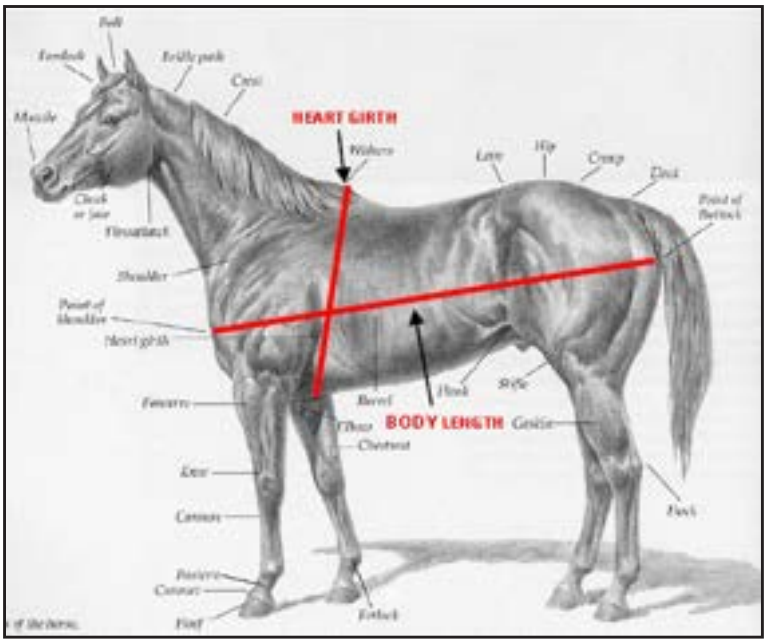
(HEART GIRTH x HEART GIRTH x BODY LENGTH) / 330 = WEIGHT

The number "330" is a constant value that is used for mature horses. Should you be measuring a yearling, use the number "301" in place of the "330", and if you are measuring a weanling, use "280" as your constant value.

Body length will take two people to measure, and it is important to consider the disposition of the horse you are trying to measure so no one gets hurt. This measurement is taken from the point of the shoulder (run your hand down the angle of the shoulder and feel for the end of the scapula bone), straight along the horse's side, and to the point of the buttock as shown in the picture. The horse must be standing squarely for this measurement to be accurate.

Heart girth is taken in the same manner as the traditional weight tape, using the highest part of the withers and keeping the tape as close behind the elbow as possible.

Measurements to compare an individual horses' weight should be taken at the same time of the day, preferably prior to morning feeding and watering for the most accurate readings.



EQUINE MANAGEMENT TIPS

FEEDING TIPS:

- Typical diet: Hay, feed, salt block and water
- Always have salt available free choice
- When changing physical forms of feeds, allow 5-7 days for transition
- Always offer unlimited clean, fresh water except immediately after work
- Do not recommend cutting balanced feeds (adding oats to already balanced diets)
- Never Feed more than .5% body weight at one feeding - Ex. 1000# horse, 5 lb. per feeding (except when feeding a complete feed such as some senior feeds)
- Divide total daily pounds of feed into evenly spaced meals
- Ideally horses should be fed 2% of body weight in forage or free choice. Ex. 1000# horse, 20 lb. of hay. Never feed below 1% BW in forage per day

GENERAL VACINATIONS & COGGINS TEST

The 5 core vaccines recommended by the American Association of Equine Practitioners are as follows. Always consult with your veterinarian for their recommendation based on your region.

- Tetanus
- Eastern Equine Encephalomyelitis
- Western Equine Encephalomyelitis
- West Nile Virus
- Rabies

HOOF CARE

- It is imperative to work closely with a credible farrier
- Normally hoof care involves regular farrier visits every 4 to 8 weeks
- Hoof health can give insight to the horse owner about the overall health of a horse
- A new hoof takes 9-12 months to grow

DEWORMING

- There are two basic types of deworming programs:
  - Continuous - feeding a daily dewormer year-round or throughout the grazing season
  - Strategic - deworming only at certain times of the year or when fecal egg counts rise
- Combination programs can also be used. For example, continuous deworming can be supplemented with strategic deworming for bots flies.
- There is no single deworming program that suits all horses and all situations. The ideal program for your horse(s) depends on the type, number and ages of the horses on your farm, pasture management and your geographic location. It is best to have your regular veterinarian help you devise an appropriate deworming program for your horse or farm.

COMMON DISEASES & DISORDERS

COGGINS

This is the name of a test that determines whether or not a horse has Equine Infectious Anemia (also referred to as EIA or Swamp Fever). EIA is an infectious viral disease that is transmitted from horse to horse by insects such as horseflies or deerflies. The virus only survives up to 2 hours on the mouthparts of the fly, but if horses are located close together, transmission can occur. The disease can also be transmitted by using the same needle or other equipment on multiple horses. It's recommended that you test your horse annually and it's particularly important if you plan to show, trail ride, or buy and sell horses.

WEST NILE

West Nile virus (WNV) is the leading cause of arbovirus encephalitis in horses and humans in the United States. Since 1999, over 25,000 cases of WNV encephalitis have been reported in U.S. horses. The virus is transmitted from avian reservoir hosts by mos-quitoes (and infrequently by other bloodsucking insects) to horses, humans and a number of other mammals. The AAEP recom-mends that horses be vaccinated for this annually in the Spring.

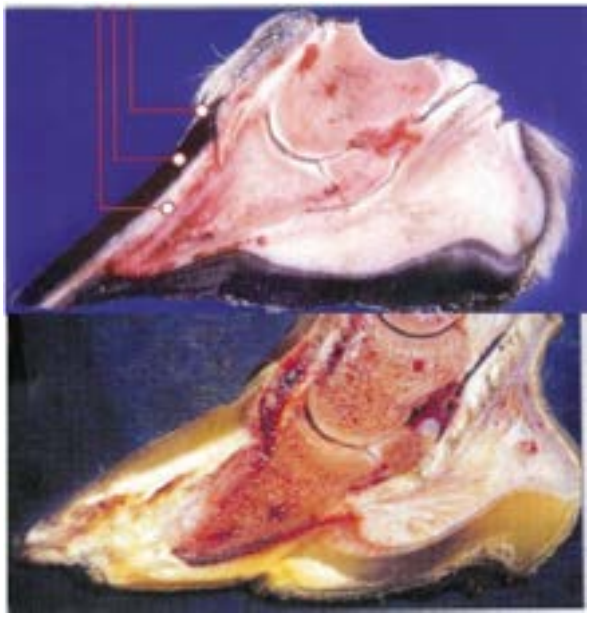
COLIC

Colic has many possible causes, most are related to feeding mismanagement. The number one cause is overloading the animal with starch, leading to hindgut fermentation of starch. Other possibilities include parasites, not having enough hay, lush pasture, insufficient water intake, change of activity, dental problems, stomach problems related to gastric ulcers.

Symptoms for a mild case include lethargy, loss of appetite, lack of fecal movements, laying down and getting up repeatedly and turning the head toward the flank. A severe cases of colic might include additional symptoms such as excessive sweating, restless-ness, pawing, rolling, kicking or biting at the belly, shallow breathing or swelling of the abdomen.

LAMINITIS

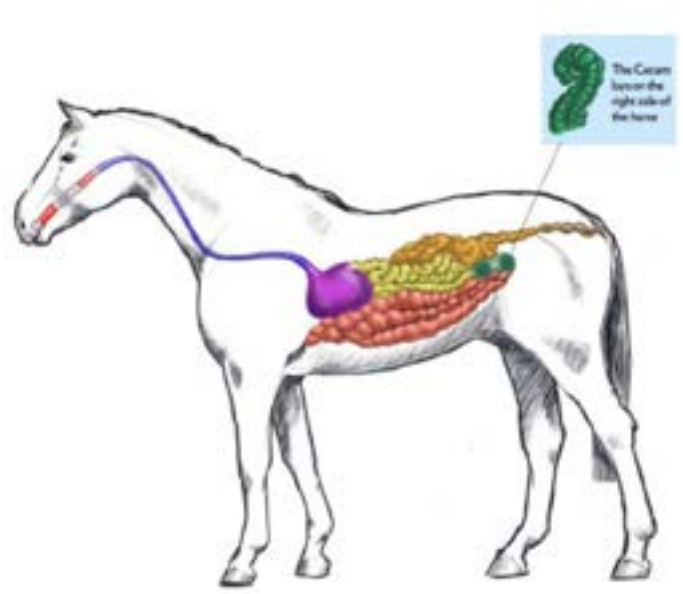
- Laminitis is the damage or inflammation at the junction between the sensitive and insensitive laminae. This junction allows for the attach-ment of the hoof wall to the coffin bone within the hoof.
- There are two types of Laminitis, Metabolic and Mechanical.
- Metabolic Laminitis is the most common and it is caused by some sort of toxemia in the body. 45% of the time Metabolic Laminitis is triggered by lush growing pasture. Other causes include grain over-load and a retained placenta.
- Mechanical Laminitis is trauma induced and can be caused by a horse being overweight or overworked.
- Symptoms of Laminitis include: standing with front feet out in front off the body with weight rocked back, warm hooves, blood in the white line, fever rings visible on hoof wall, pain response when pressure is applied to sole, less activity, depression, and bounding pulse in affected leg.



Top photo shows the cross section of healthy hoof and the bottom photo is of one with Laminitis showing rotation of the coffin bone

EQUINE DIGESTIVE SYSTEM

Ever wonder how the horse's digestive system works What goes on in there? Why are they so sensitive? An why should we recommend dividing the feed ration into 2 or 3 feedings per day? Let's take a closer look t better understand.



Mouth & Teeth: Teeth are the beginning of the entire process. Designed to grind foodstuffs into smaller pieces, the act of chewing also stimulates three glands in the mout to produce saliva. These glands can produce up to 10 gallons per day of saliva. The saliva contains bicarbonate (a natural acid buffer) and amylase (assists with carbohydrate digestion). Teeth are an important component to digestion and should be checked annually to insure proper function. A horse that is unable to effectively chew long stem forage, such as a senior horse, is at higher risk of impaction colic. If you have a horse like this, be sure to consult with your veterinarian for a comprehensive care and feeding program

Esophagus: The purpose of the esophagus is to funnel food from the mouth to the stomach. Approximately sixty inches in length, this is a one-way passage. Unlike humans, horses cannot vomit. This is why horses who 'bolt' their feed (eat too fast and don't chew adequately) can get into trouble and feeding practices need to be adjusted to reduce the risk of bolting feed.

Stomach: Small in size compared to the rest of the horse's body, food will only spend about 15 minutes in the stomach before it moves on. The stomach is designed to function best when it is ¾ full; therefore, care takers are encouraged to provide horses with a steady supply of forage throughout the day. Because of the small size, a horse should not be fed more than 0.5% of body weight in one meal. Meals of grain are best divided into 2 or 3 portions per day.

Small Intestine: After leaving the stomach, food will spend anywhere from 30 to 60 minutes here; a good thing with the many nutrients that are absorbed. Nutrients such as proteins (amino acids), vitamins A, D, E and K, calcium, phosphorus, and other minerals along with starches and sugars. Cereal grains such as oats, barley, and corn that are high in carbohydrates (starch and sugar) are easily digested here. The horse doesn't have a gall bladder, so bile from the liver flows directly into the small intestine to aid in the digestion of fat.

Large Intestine: The large intestine is comprised of the cecum, large colon, small colon and rectum.

The cecum is located on the right side of the horse and is where fiber is digested and converted to energy and heat. The shape of the cecum is unique because the entrance and exit are located at the top of the organ. Able to hold up to 10 gallons of food and water, the cecum contains populations of bacteria and microbes which further break down food (fiber) for digestion and absorption. These microbes are accustomed to digesting a horse's 'normal' diet, so any adjustments in feed or forage should be done slowly, allowing the microbes to adjust.
If a horse consumes too much starch in one meal, it is unlikely to be digested fully in the small intestine. It would pass through the small intestine into the cecum where the microbial organisms rapidly ferment the starch, producing excessive gas and lactic acid that could ultimately cause digestive upset or colic.

The large colon continues the digestive process by absorbing additional fiber components and water. This is where B vitamins are absorbed.

The small colon is where excess moisture is reclaimed to the body and where the formation of fecal balls occurs.

The rectum is where the fecal balls are expelled.

With this short tour and explanation, we hope you have a better understanding of how the horse digests and absorbs nutrients, and that this also sheds light on why good feeding management and regular dentistry care are important aspect for the digestive health and overall well-being of your horse.

Nutrena®
What's inside counts.™

EQUINE BASIC NUTRITION

ESSENTIAL NUTRIENTS

- **Water**
- **Energy**
  - ⇒ Carbohydrates - Starch & Fiber
  - ⇒ Fat
- **Protein**
  - ⇒ Amino Acids
- **Minerals**
  - ⇒ Macro- Ca, Phos
  - ⇒ Micro- Cu, Zn, Se, Mn
- **Vitamins**
  - ⇒ Fat Soluble- A, D, E, K
  - ⇒ Water Soluble- B Vitamins

VITAMINS

FAT-SOLUBLE VITAMINS: A, E, D
Can be stored in the body

- Vitamin A
  - ⇒ Helps support skin, coat and hoof integrity
  - ⇒ Provides antioxidant benefits
  - ⇒ Essential for the absorption and utilization of calcium and phosphorus
- Vitamin E
  - ⇒ Helps support healthy skin and coat
  - ⇒ Provides antioxidant benefits
  - ⇒ Essential for the absorption and utilization of calcium and phosphorus
- Vitamin D
  - ⇒ Essential for the utilization of calcium and phosphorus

WATER-SOLUBLE VITAMINS
Excesses are excreted through urine and need to be part of daily nutrition

- Biotin
  - ⇒ Recommended by farriers to improve hoof quality and to treat dry, cracked hooves
  - ⇒ Maintains growth of the hoof horn
- Vitamin B
  - ⇒ Essential for skin, coat and hoof health
- Vitamin C
  - ⇒ Antioxidant benefits
  - ⇒ Conditionally essential

WATER

- Consumption can vary from 4- 12 gallons per day for mature horses
- Lactating mares or heavily worked horses will require more water
- Make sure water is available free-choice to horses, with one exception. After exercise, cool a horse off before allowing it to drink all it wants.
- Inadequate water consumption may result in feed becoming impacted in the intestinal tract. This can cause colic.

ENERGY = FATS, CARBOHYDRATES & PROTIEN

CARBOHYDRATES

- Non-Structural Carbohydrates = Starch + Sugar + Fiber
- Starch & Sugar are digested in the foregut
  - ⇒ Starch is necessary for replacing glycogen stores, without glycogen the horse becomes fatigued - essential for racing, running, jumping
  - ⇒ Red blood cells and brain cells depend almost entirely on glucose as an energy source
  - ⇒ We know that too much starch fed at one meal may result in gas colic
  - ⇒ Many metabolic disorders require a horse to be on a controlled starch and sugar diet
- Fermentable fiber - microbial fermentation - hindgut

FAT

- High fat diets have been shown to improve performance in high intensity, short duration activities (barrel racing)
- High fat diets have been shown to increase stamina in low intensity, long duration activities (endurance riding). - Horses use fats in the blood longer, so less lactate build up in muscles = less sore muscles
- 3 week minimum adaptation period before you see benefits
- Increased acetylcholine in the brain (helps diminish startling)

PROTEIN

- Horses of all ages require adequate amounts of protein for maintenance, growth, reproduction and work. Proteins are important building blocks for body cells.
- A horses total protein intake should consider both feed and forage.
- Protein is a fairly inefficient source of energy.
- **AMINO ACIDS** are the building blocks of protein. Lysine, methionine and threonine are the first limiting amino acids and determine the protein quality.
- The horse requires 10 essential amino acids that must be provided in the diet. Balanced Amino Acids are needed for growth, muscle maintenance and repair, quality hoof and hair coat, and milk production

MINERALS

- Use caution with supplementation as too much of one mineral can tie another mineral up (not allow that mineral to be absorbed)
- Important for the formation and repair of structural tissues
- Organic Trace Minerals used in Premium Nutrena® Feeds are the most bio-available

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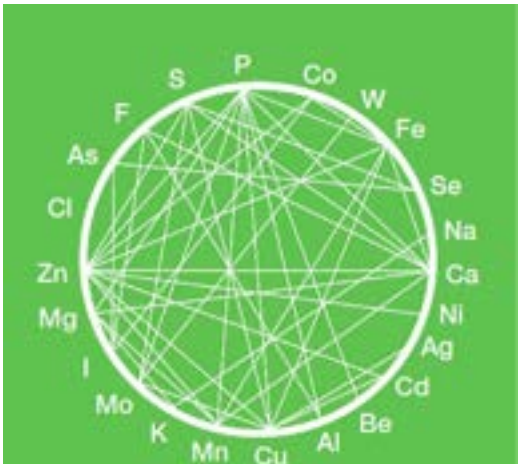
What's inside counts.™

ORGANIC TRACE MINERALS



*Adapted from "Trace Elements, hair Analysis and Nutrition"

Organic Trace Minerals
We use organic trace minerals because they are absorbed better than non-organic minerals. This is because they are tied to an amino acid, which the body readily absorbs.

Quality over Quantity
Knowing the precise amount of nutrients needed and using the best ingredients is key. Just because another product has more of a mineral doesn't mean it will be useful or available to the horse, the source and bioavailability is more important.

The diagram on the left shows that balancing minerals is critical because
an excess or deficiency of one mineral can cause imbalance of other minerals.

Nutrena® eliminates guesswork by giving horses the proper balance of minerals in every ration.

WHERE MINERALS MAKE A DIFFERENCE

Bone Development
Ca, P, Mg, Mn, Cu

Muscle Development
P, S, Zn, Se

Milk Production
Ca, P, Mg, Zn

Skin & Hoof Integrity
Zn, Cu and Mn

Appetite
Mg, K, Zn, Co

Nervous System
Mg, P, Cu

Fetal Development
Cu, Zn, Mn, Se

Disease Resistance
Cu, Zn, Mn, Se

Hair Coat
Cu, Zn, Se

Fertility
P, Cu, Zn, Se, Mn

Nutrena®
What's inside counts.™

HOW MUCH TO FEED

BASICS OF BALANCING A DIET & FEEDING DIRECTIONS

Select quality forage. Ideally 2% BWT

*Never feed less than 1% BWT in forage/day unless feeding a complete feed with built in forage.
*BWT (bodyweight)

+

Choose an appropriate feed to balance what's missing.

.01-1.5% BWT depending on product tag directions.

+

Free Choice Plain Salt

*Never feed less than 1% BWT in forage/day unless feeding a complete feed with built in forage.
*BWT (bodyweight)

+

Free Choice Water

=

COMPLETE, BALANCED DIET

FEEDING DIRECTIONS

- A feed tag will list the recommended feed rate. This can vary from 1/10 pound to 2 pounds per hundred pounds of body weight, depending on the fortification design of the feed and quality of nutrients. It is very important to follow the feed-ing rate directions on the tag.
- Think of it like you are making a box cake. You need to follow the directions, if you don't use the entire box of cake mix, you won't get the desired results.
- It can be a challenge to help customers understand the value of a premium feed. But paying more for feed can actually save horse owners money in the long run. This is partly due to the lower feeding rates and partly due to the fact that there is less supplementation needed when feeding a premium feed. Being able to convey this to your customers is key!

DO THE MATH, IT'S EASY!

Most Nutrena® feed tags show feeding rates per 100 lbs of the total bodyweight which is the same as % of bodyweight. First ask the horse's approximate bodyweight, then multiply by the percent listed for the appropriate class listed in the feeding directions.

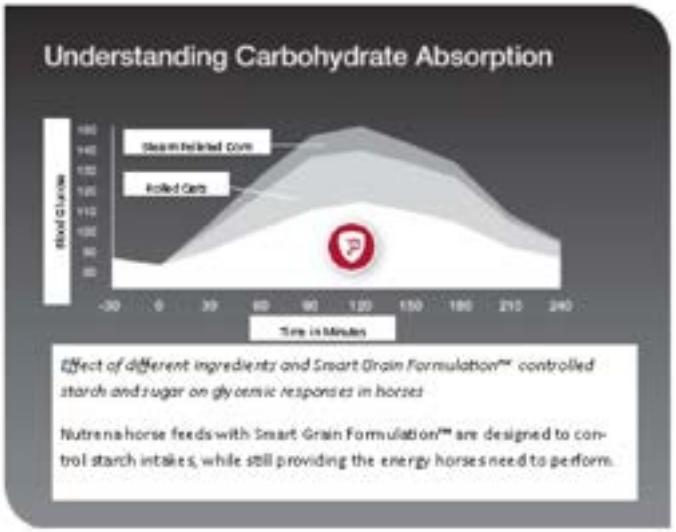
EXAMPLE: In this scenario a customer tells you that their horse weighs 1200 lbs and it's the off season of their competitive season, so they are doing light work. Check the feeding directions on the tag and select the rate for "performance horse and light exercise". Remember, this is the minimum recommended per day, if the horse needs additional calories, it should be fed at the higher feeding rates. Ideally the recommended amount of feed should be divided into two equal feedings.

1200 LB. HORSE X **.5 % (.005)** = **RECOMMEND A MINIMUM OF 6 LB. OF FEED**

CONTROLLED STARCH

UNDERSTANDING STARCH IN THE DIET

- There is a lot of confusion amongst horse owners around starch in the diet.
- Frequently when people ask about starch in the diet they refer to NSC which stands for Non-structural carbohydrates, which includes sugars and starches.
- Starch is the main source of energy for muscles during heavy exercise when oxygen is unavailable (anaerobic exercise).
- Starch is a great energy source for most horses, starch is necessary for replacing glycogen stores. Without glycogen the horse becomes fatigued.
- Red blood cells and brain cells depend almost entirely on glucose as an energy source.
- We know that too much starch fed at one meal may result in gas colic. The number 1 cause of deaths from colic is from starch overload due to feeding mismanagement. This makes a controlled starch diet appealing to horse owners.



LOW STARCH VS. CONTROLLED STARCH

- Sugars and some starches are digested rapidly, while other starches may digest more slowly because of the plant's structure they are derived from. Because horses cannot tolerate large intakes of NSC in one meal, they must be controlled in the diet.
- Most horses do great with a moderate level of starch in their feed however some horses have metabolic conditions, such as EMS, Insulin Resistance or Laminitis which require a lower starch level in the diet.
- All horses benefit from a controlled starch diet because all are prone to starch overload, but not all horses benefit from a low starch diet.

SEE THE DIFFERENCE

Look at the amount of corn, oats, and SafeChoice® in the these three jars. Each jar has the same number of calories in the amount shown, but not the same amount of starch and sugar. The jar to the right of each feed represents the amount of starch and sugar in the feed. Look at how much more starch and sugar is in the corn compared to the oats and the SafeChoice®. How do you think that impacts the horse when they have a limited capacity to digest starch and sugar.

PREBIOTICS & PROBIOTICS

Dr. Mercola states in "Total Health" that eighty percent of the human immune system is located in our digestive system. Dr. Mercola further states that there are 100 trillion bacteria, weighing three pounds lining the human intestinal tract to protect our body from invasions. Maintaining a balance of more good bacteria than bad bacteria is the goal.

- Prebiotics and probiotics improve nutrient absorption.
- A proprietary blend of research supported prebiotics and probiotics are included in all Nutrena® premium feeds. *It should be noted that not all pre and probiotics are created equally. There are multiple manufacturers and sources. Nutrena® has done numerous trials and research to select viable, proven sources.
- Our probiotics are uniquely designed to withstand the heat and friction of the pelleting process.
- PREBIOTICS: Promote the natural growth of beneficial bacteria populations
- PROBIOTICS: Beneficial bacteria similar to naturally occurring organisms in the hindgut that help support digestive health
- Benefits of having both prebiotics and probiotics in the feed:
  - ➢Improved gut health
  - ➢Improved feed efficiency
  - ➢Nutrient absorption goes up and nutrient excretion goes down
  - ➢Improved digestion
  - ➢Improved nutrient absorption
  - ➢Reduced risk of digestive upsets
  - ➢Reduced stress impact during competition or diet changes

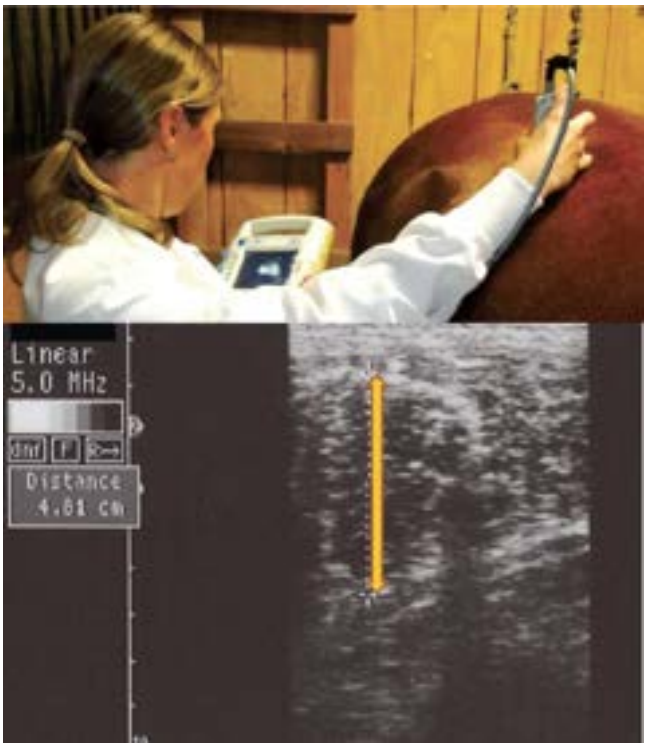
AMINO ACIDS

Why do horses need amino acids?

Amino acids are the building blocks of protein. Horses cannot synthesize all of the amino acids required for development and maintenance; they require additional amino acids be provided in their feed. Lysine, methionine and threonine are the first limiting essential amino acids for horses. If these are deficient, the horse cannot make full use of protein for hair coat, hoof growth and muscle development.

Nutrena® Amino Acid Model

Nutrena's proprietary amino acid model offers unique results. Research trial results in Universities and on farms include improved toplines, haircoats, and rebuilding of muscles.



Quality over Quantity

Crude protein indicates the quantity of nitrogen in the feed, but does not indicate the quality, which is determined by amino acids. Guaranteed levels of amino acids indicate that quality protein levels are available. All Nutrena® premium horse feeds contain optimum levels of amino acids, Lysine, Methionine and Threonine, for ideal muscle development and maintenance, hair coat and hoof growth.


GUARANTEED ANALYSIS:

When comparing feed options, check the tag to ensure that these important nutrients are provided in the diet.

SELLING TO THE EQUINE CUSTOMER

QUESTIONS & ANSWERS TO HELP IDENTIFY THE RIGHT PRODUCT FOR YOUR CUSTOMER

The first step in helping a customer decide on a product that is right for them is to learn about what types of products they might be shopping for. Here are some very basic questions that you can ask to start a conversation with the customer:

- What can I help you with today?
- Are you finding everything alright?
- What kind of animals do you have at home?
- In order to help determine what products are right for an equine owner, try asking some of the questions below. Many times just one question will lead to a valuable conversation with the customer that will help you to recommend products that are a great fit. For every type of customer response you receive (see list below) there is a product available that you can recommend.
- What type of feed do you currently feed? Are you happy with it? If not than why?
- How many horses do you feed? Are they fed in a group setting?
- Are you happy with your horse's current body condition or weight?
- What do you do with your horses?

CUSTOMER RESPONSE	RECOMMENDATION FOR THE CUSTOMER
Overweight or Easy Keeper	SafeChoice® Special Care, SafeChoice® Maintenance, Empower® Topline Balance™
Metabolic Disorders	SafeChoice® Special Care, ProForce® Fiber, Empower® Topline Balance™
Ponies and Miniatures	SafeChoice® Special Care, Empower® Topline Balance™
Underweight or Hard Keepers	SafeChoice® Senior, SafeChoice® Perform, ProForce® Fuel, Triumph® Senior
Concerns with Aging and Weight Management	SafeChoice® Senior, ProForce® Senior, Triumph® Senior
Pregnant	SafeChoice® Mare & Foal, SafeChoice® Original
In Competition	Safe Choice® Perform SafeChoice® Original, Empower® Topline Balance™, Empower® Boost
Low Work Levels/Maintenance Horses	Safe Choice® Original, Safe Choice® Maintenance, Safe Choice® Special Care, Empower® Topline Balance™
Horses Fed in Group Setting	SafeChoice® Original

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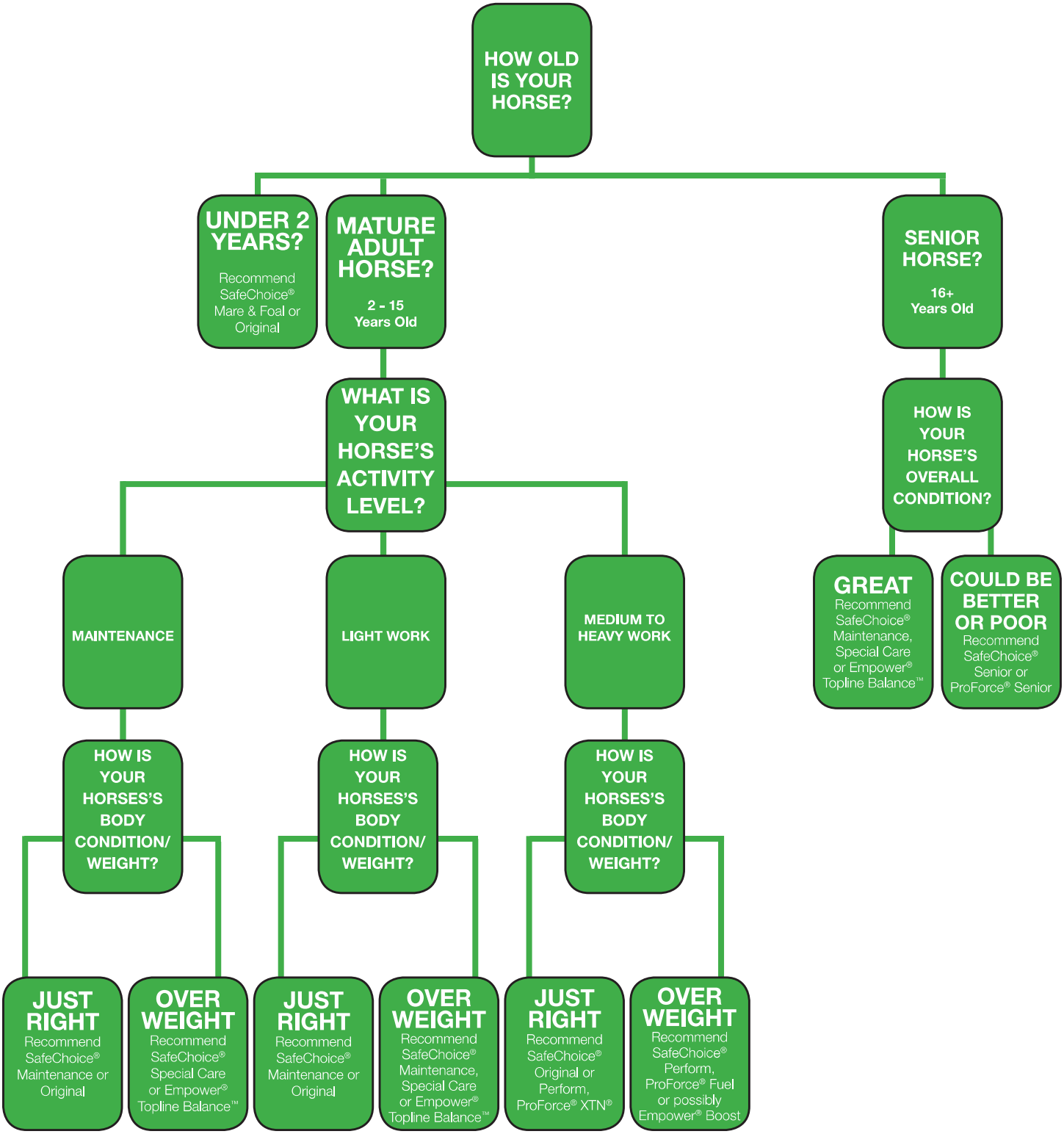
WHAT TO FEED



To learn more go to www.nutrenaworld.com or www.horsefeedblog.com