

Basic Equine Nutrition

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Agenda

Topics Covered

What is the Equine Digestive System

Nutrition

feed

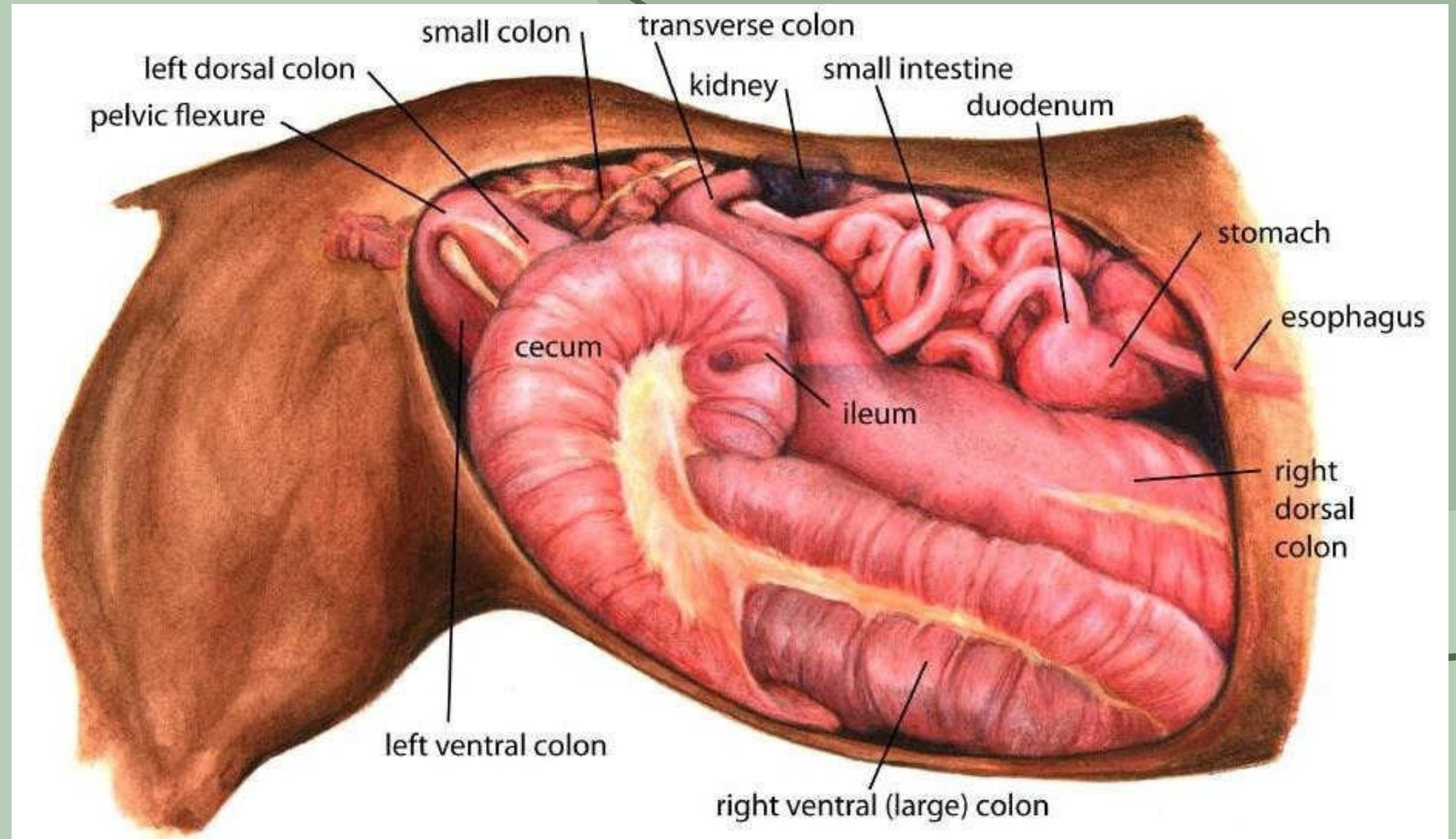
Feeding guidelines

Equine digestion

From start to end



Horses are non-ruminant herbivores (hind-gut fermentors)

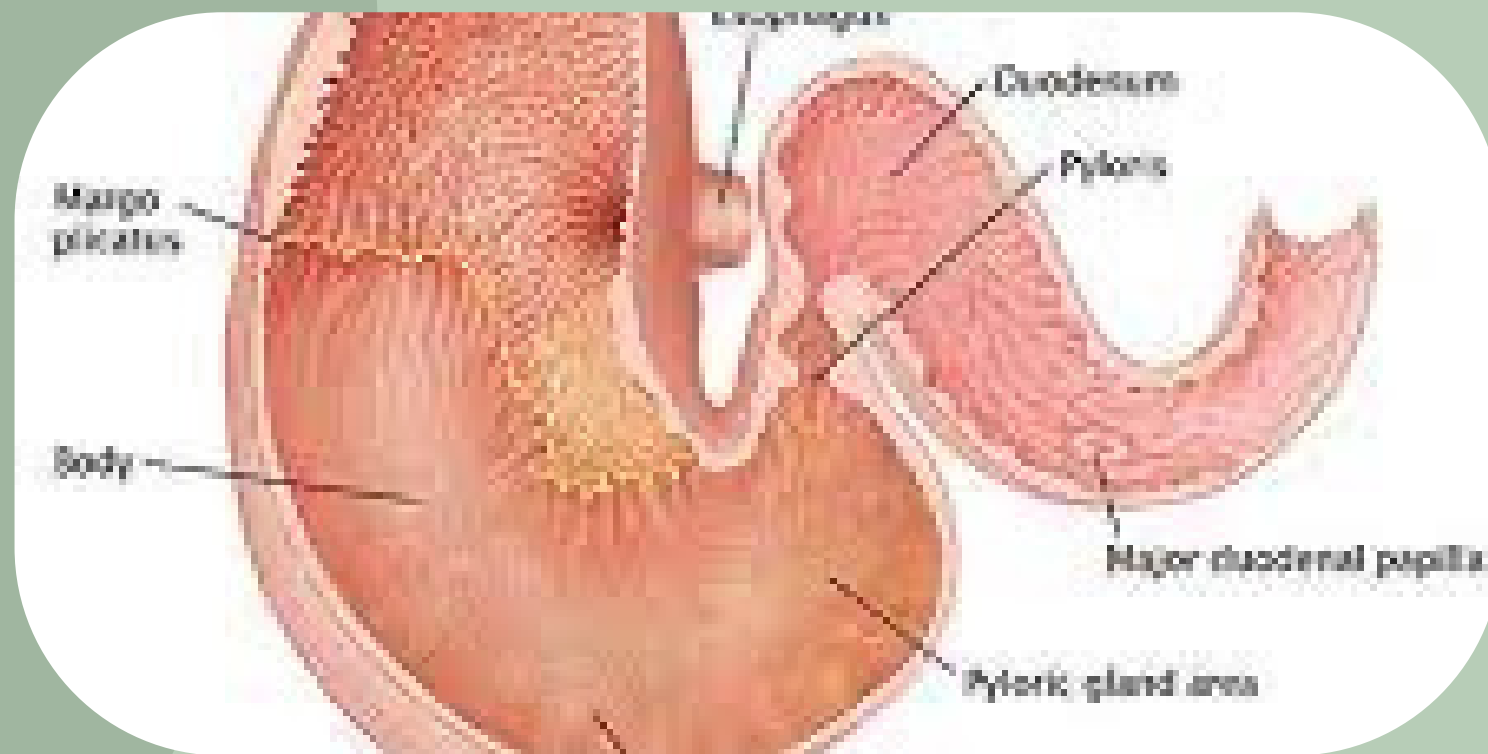




Digestion starts in the the mouth

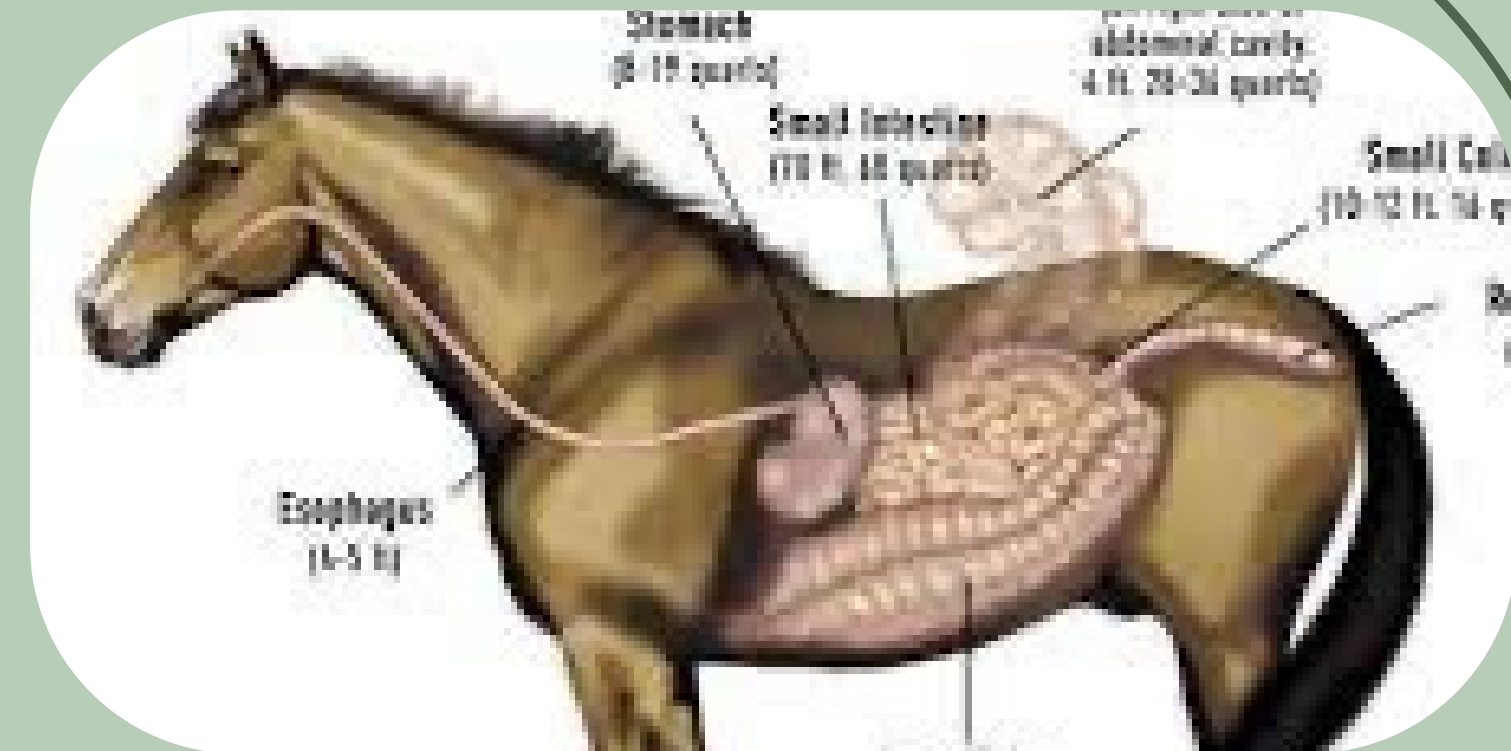
Horses teeth move side-to-side, not up
and down

The stomach



The food is than digested
more in the stomach

Stomach acids help release the nutrients into
absorbable contents

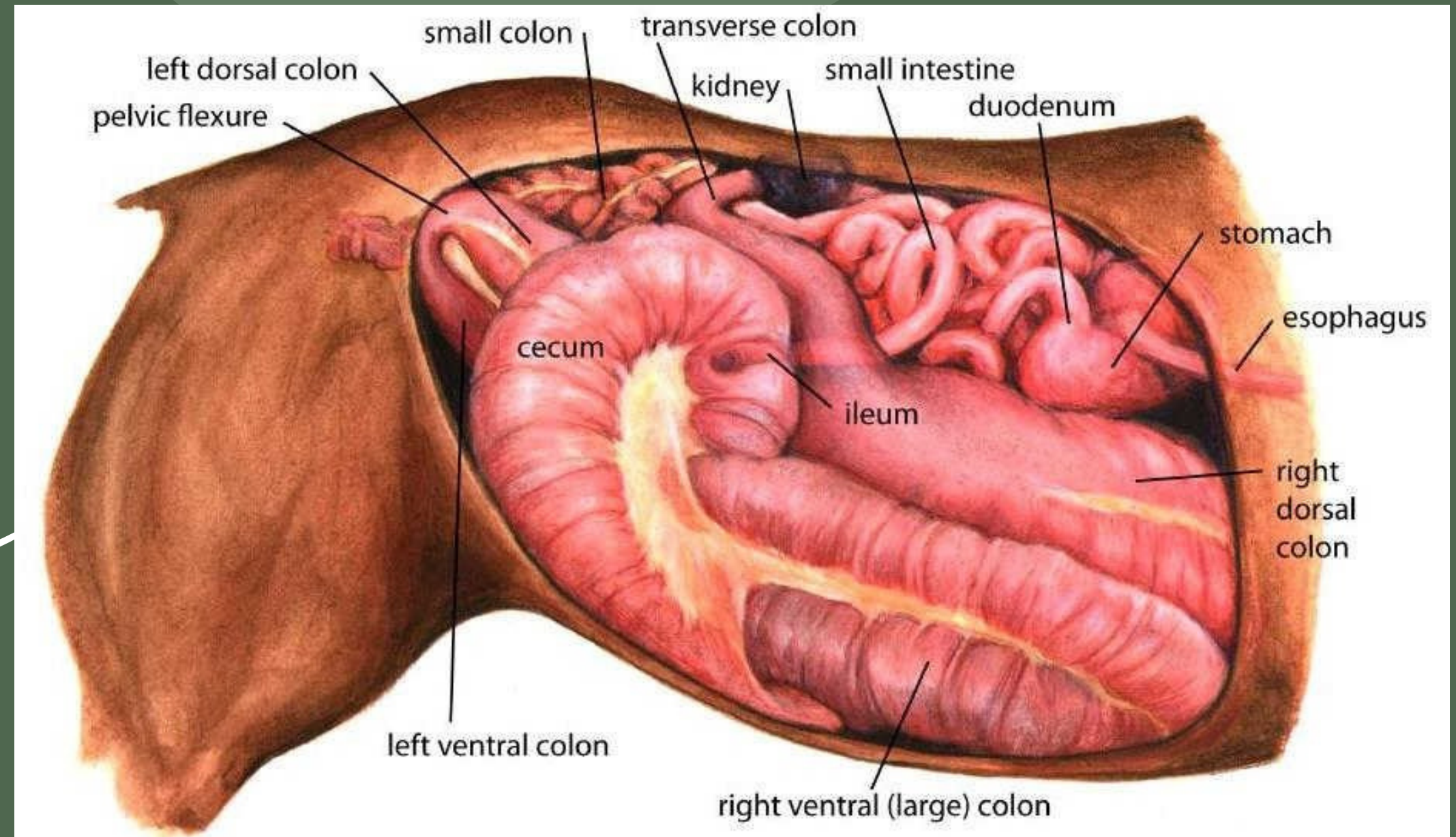


One way street

Anything that enters the stomach
can not come back up

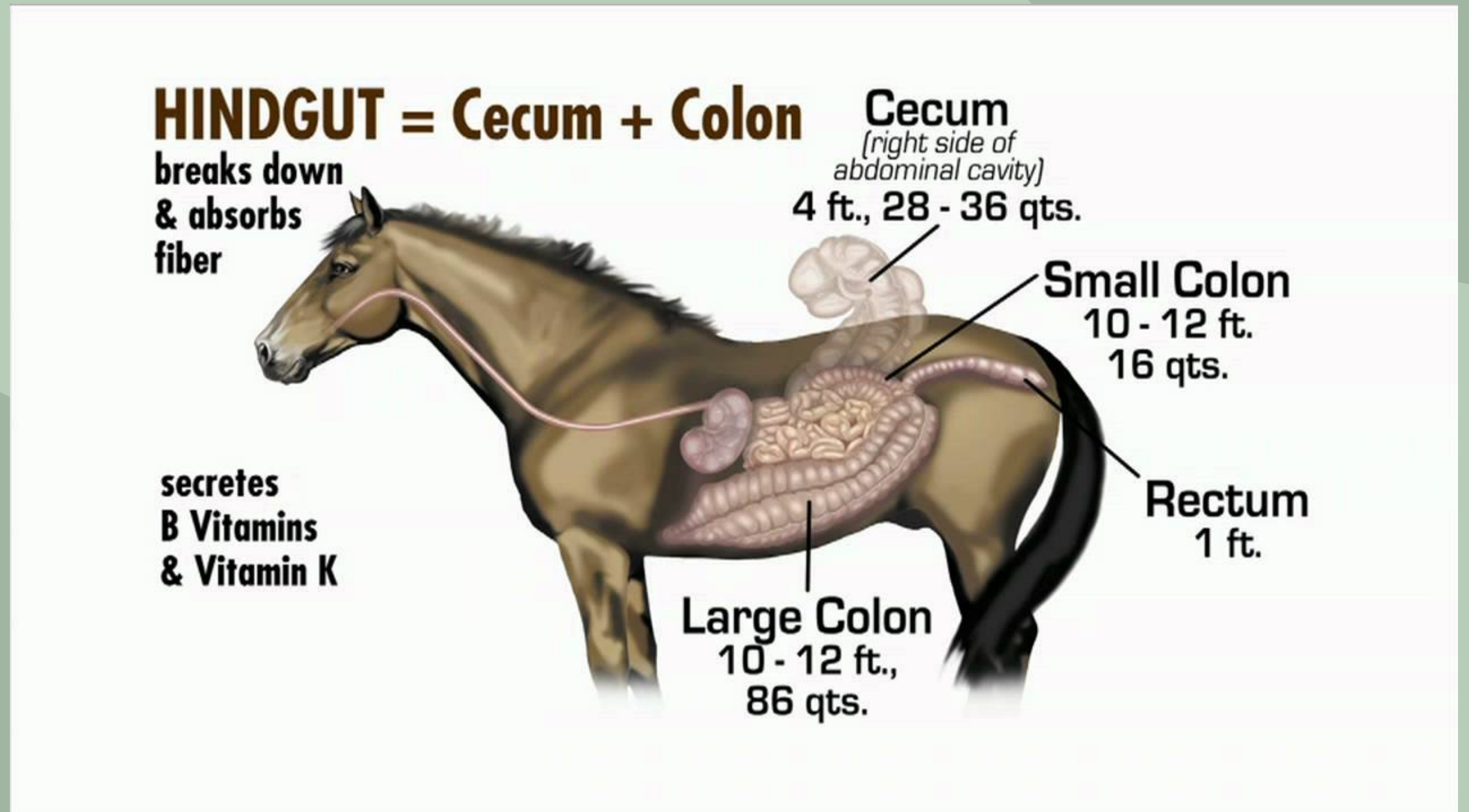
Entering the small intestine

Main site for nutrition absorption
All of the dietary fat is absorbed here



Foregut & Hindgut

The Cecum breaks down of plant fiber that is converted to fatty acids and an energy source



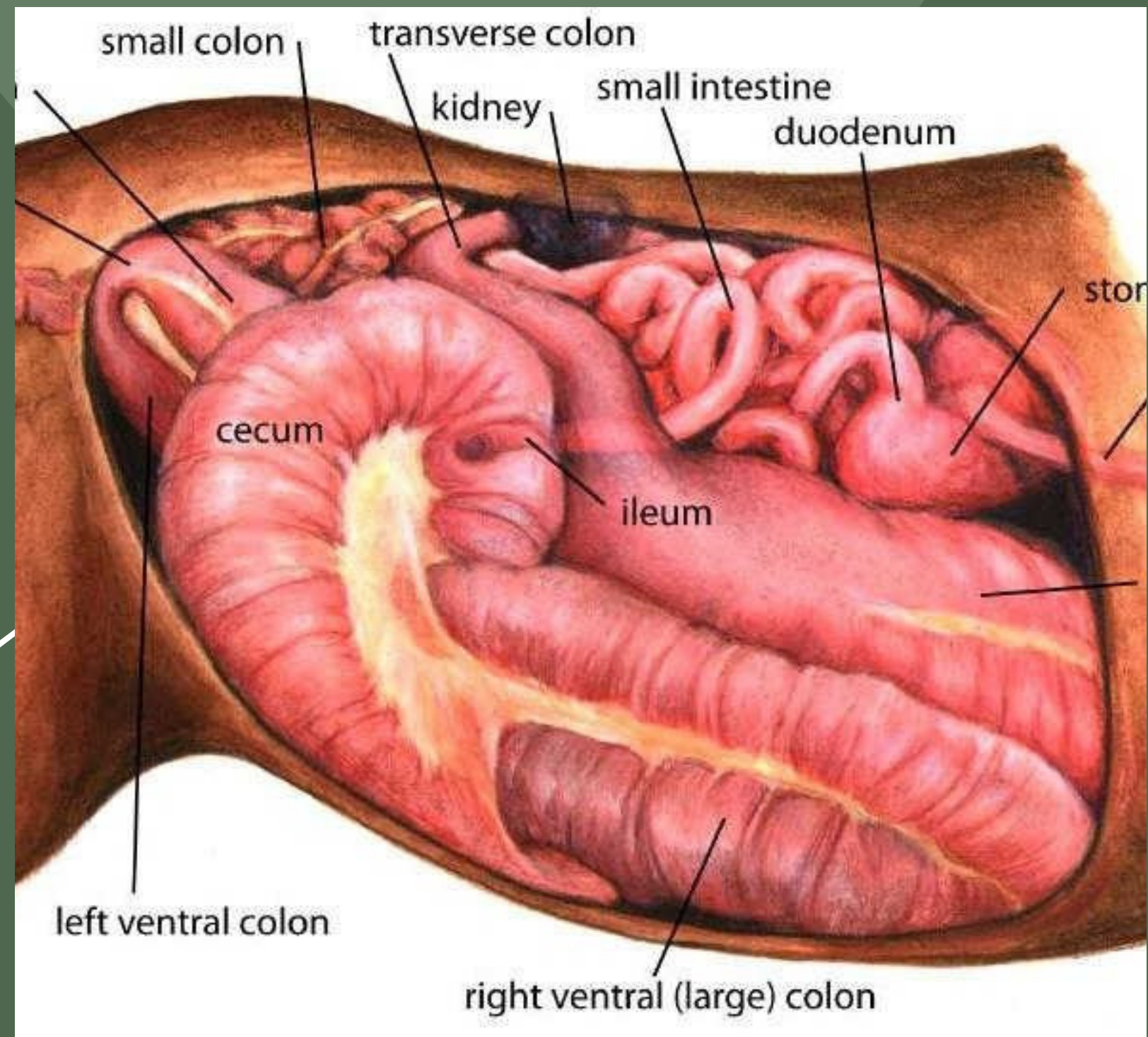
Small & large Colon

Large colon- nutrient absorption

Most common place for sand accumulation

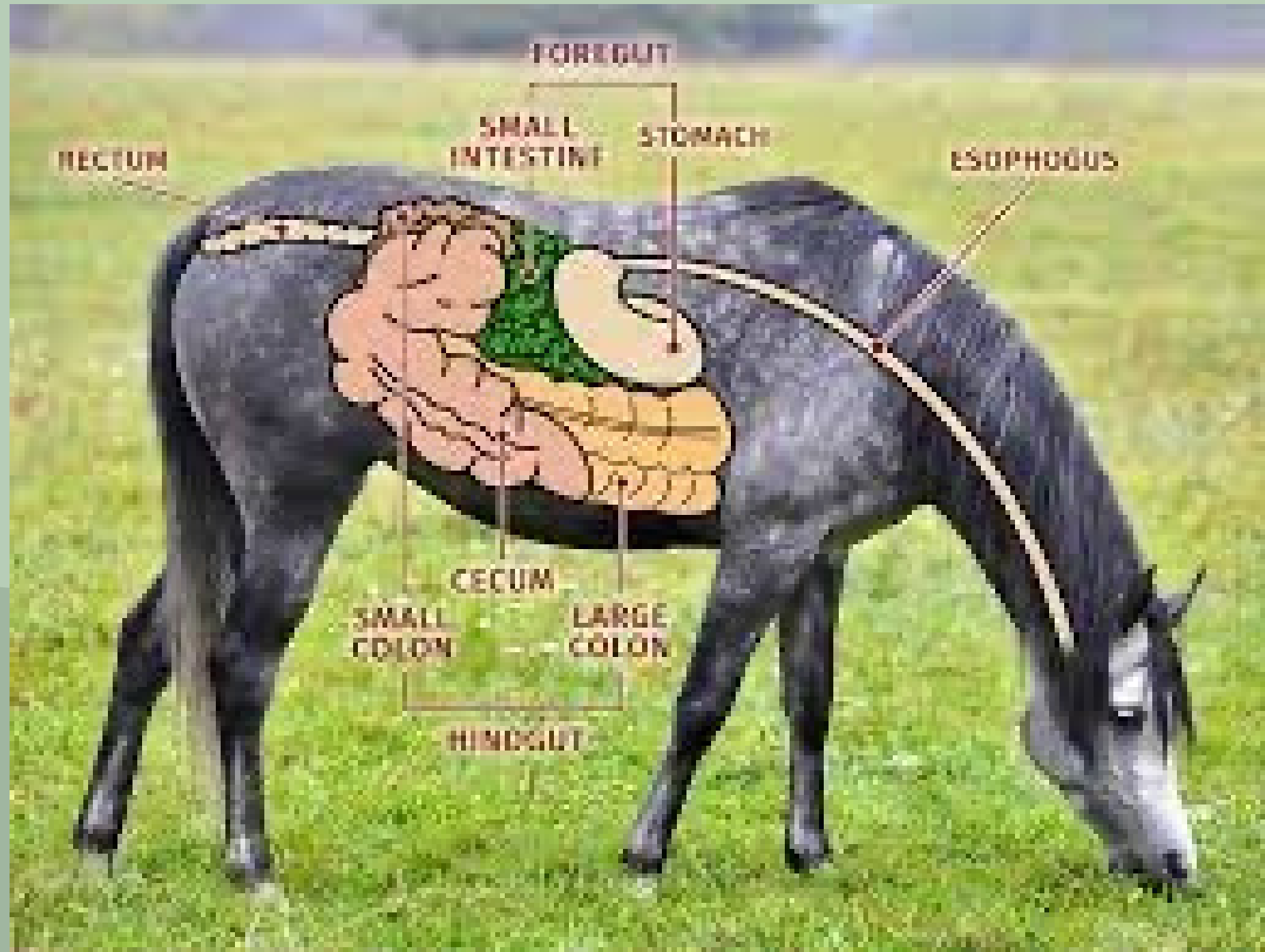
Small colon- water & mineral absorption

molds contents into fecal balls



Rectum

Final area, used for storage and expulsion of feces.



Essential nutrients



Water



Forages



Vitamins, mineral,
fats, proteins
& carbohydrates



Water


- Horses drink 2 quarts of water per pound of hay
- In high temperature, hard work, or for the lactating mare the water requirement may be 3 to 4 times the normal consumption.
- the most important- will not live long without it

Forage

-Forages are classified as legumes or grasses.

- Fiber source




HAY BASICS



75% Most agree forage should be a minimum of 75% of the horse's diet. For an adult 1,000-pound horse, that means **a minimum of 15 to 19 pounds of forage daily.**





TYPES OF HAY

HAY GENERALLY FALLS INTO **THREE CATEGORIES:**


-  **LEGUME**
(e.g., Alfalfa)
-  **COOL-SEASON GRASSES**
(e.g., Timothy)
-  **WARM-SEASON GRASSES**
(e.g., Teff)

What is readily available and cost effective depends on your location and operation.

A horse's energy and nutrient needs are mostly dependent on:

-  **AGE**
-  **BODYWEIGHT**
-  **WORKLOAD**
-  **STAGE OF DEVELOPMENT**

NUTRITIVE VALUE & PALATABILITY

 **& PALATABILITY**

PRIMARILY DEPEND ON TWO FACTORS:

- SPECIES**
Legumes tend to be more palatable and nutrient dense than grasses
- MATURITY**
Less mature forages tend to be more palatable and nutrient dense

OTHER FACTORS INCLUDE:

- Local growing conditions (e.g., rainfall and temperature)
- Soil fertility
- Cutting management
- Harvest conditions (e.g., moisture at the time of baling)
- Storage conditions and length
- Presence of weeds
- Presence of mold and dust
- Presence of insects and disease

Hay can meet the digestible energy and crude protein requirements of most healthy, adult horses up to moderate work. However, it cannot meet the vitamin and mineral requirements of horses and can be supplemented with ration balancers or concentrate products.
Contact your veterinarian or an equine nutritionist to formulate and balance your horse's ration.

Vitamins, mineral, fats, proteins & carbohydrates



Supplemented

Multi or concentrated



Complete feed

Can also be a ratio balancer



Fat

- Can be added to a feed to increase the energy density of the diet.
- Fat is normally found at 2 to 6% in most premixed feeds; however, some higher-fat feeds will contain 10 to 12% fat



Carbohydrates

- Carbohydrates are the main energy source used in most feeds.
- The main building block of carbohydrates is glucose.
- Sudden ingestion of large amounts of starch or high-sugar feeds can cause colic or laminitis.

Proteins

- Protein is used in muscle development during growth or exercise.
- the main building blocks of protein are amino acids.
- Most adult horses only require 8 to 10% protein in the ration; however, higher protein is important for lactating mares and young growing foals.
- Signs of protein deficiency include a rough or coarse hair coat, weight loss, and reduced growth, milk production, and performance.
- Excess protein can result in increased water intake and urination, and increased sweat losses during exercise, which in turn lead to dehydration and electrolyte imbalances.



Vitamins

- Fat-soluble vitamins are fat-soluble (vitamins A, D, E, and K),
 - Water-soluble (vitamin C, and B-complex).
 - Horses at maintenance usually have more than adequate amounts of vitamins in their diet if they are receiving fresh green forage and/or premixed rations.
 - Where a horse would need a vitamin supplement include when feeding a high-grain diet, or low-quality hay, if a horse is under stress (traveling, showing, racing, etc.), prolonged strenuous activity, or not eating well (sick, after surgery, etc.).



Vitamin cont.

- Vitamin E is found in fresh green forages, the amount decreases with plant maturity and is destroyed during long-term storage.
- Under heavy exercise or increased levels of stress also may benefit from vitamin E supplementation.
 - Vitamin K and B-complex are produced by the gut microbes.
 - Vitamin C is produced naturally by the liver.
 - Severely stressed horses, however, may benefit from B-complex and vitamin C supplements during the period of stress.





Minerals

- Minerals are required for the maintenance of body structure, fluid balance in cells (electrolytes), nerve conduction, and muscle contraction.

Minerals cont.

- Calcium and phosphorus are needed in a specific ratio ideally 2:1, but never less than 1:1.
- Alfalfa alone can exceed a Ca:P ratio of 6:1.
- Sweating depletes sodium, potassium, and chloride from the horse's system,
- Young horses may need added calcium, phosphorus, copper, and zinc during the first year or two of life.



Concentrates



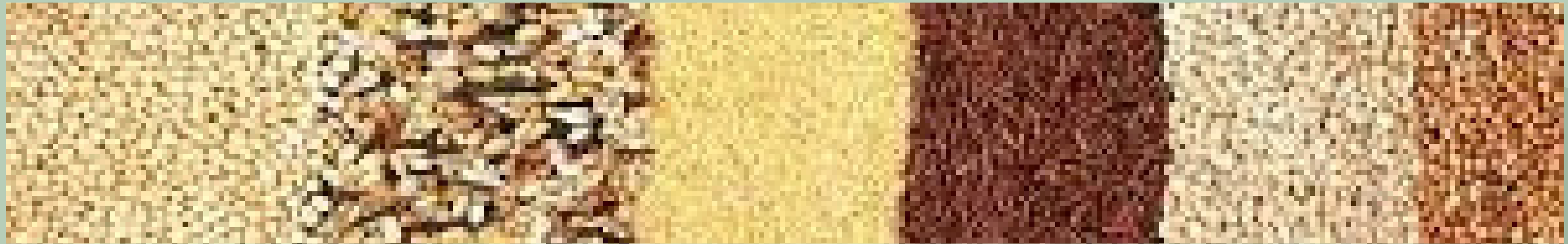
Grains



Fat

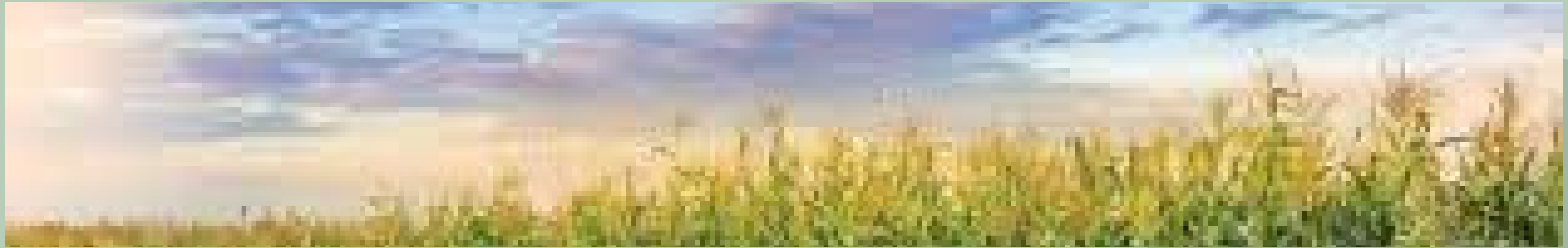


Protiens



Grains

- The most common are oats, corn, and barley.
- Grains such as oats, barley, and corn can be fed whole, typically processed to increase digestibility.
- Grains are in general low in fiber and high in energy (particularly if processed),
- Grain is rarely fed by itself as a concentrate; instead, it is often incorporated into pellets or mixed with pellets to make sweet feed.



Commercial Grain & Pellet Mixes

- Commercial grain and pellet mixes are another feed option for your horse.
- Mix of concentrates that provide energy, protein, vitamins, and minerals that are specific are balanced based on a horse's nutrient needs.
- Commercial mixes eliminate the guesswork of providing the appropriate amounts of minerals and vitamins in balanced quantities.
- Adding additional grains to commercial mixes will interfere with the nutritional balance of the feed.



Sweet feed/textured Feed

- Textured feeds are a mixture of several cereal grains and molasses (which is why it is often referred to as sweet feed). A balancer pellet is often included providing minerals and vitamins. Other ingredients may also be added such as rice bran, beet pulp, and powdered fat.
- The addition of molasses eliminates dust and increases palatability.



Pelleted Feed

- Pelleted feeds often contain the same ingredients as sweet feeds.
- Pelleted feeds have a longer shelf life and are not as likely to mold.
- It is important to note that hay pellets are different from pelleted feeds and are considered a form of forage, not concentrate.



Extruded Feed

- Similar to pelleted feed,
- As an additional step, the feed is “cooked” under high temperature and pressure before it goes through a die. This helps to break down some of the structures within the nutrients of the feed.
- It often has a higher fat concentration than pellets. Texture-wise, it is typically softer and less dusty as well.



Complete Feed

- “Complete” describes a feed that contains everything the horse needs in his diet, including the forage.
- Complete feeds can be fed as the sole ration. Senior horses that have lost the ability to chew hay will benefit from a complete feed.
- Complete feeds can serve as an alternative option when good hay quality is limited in your area as well.



Ration Balancers

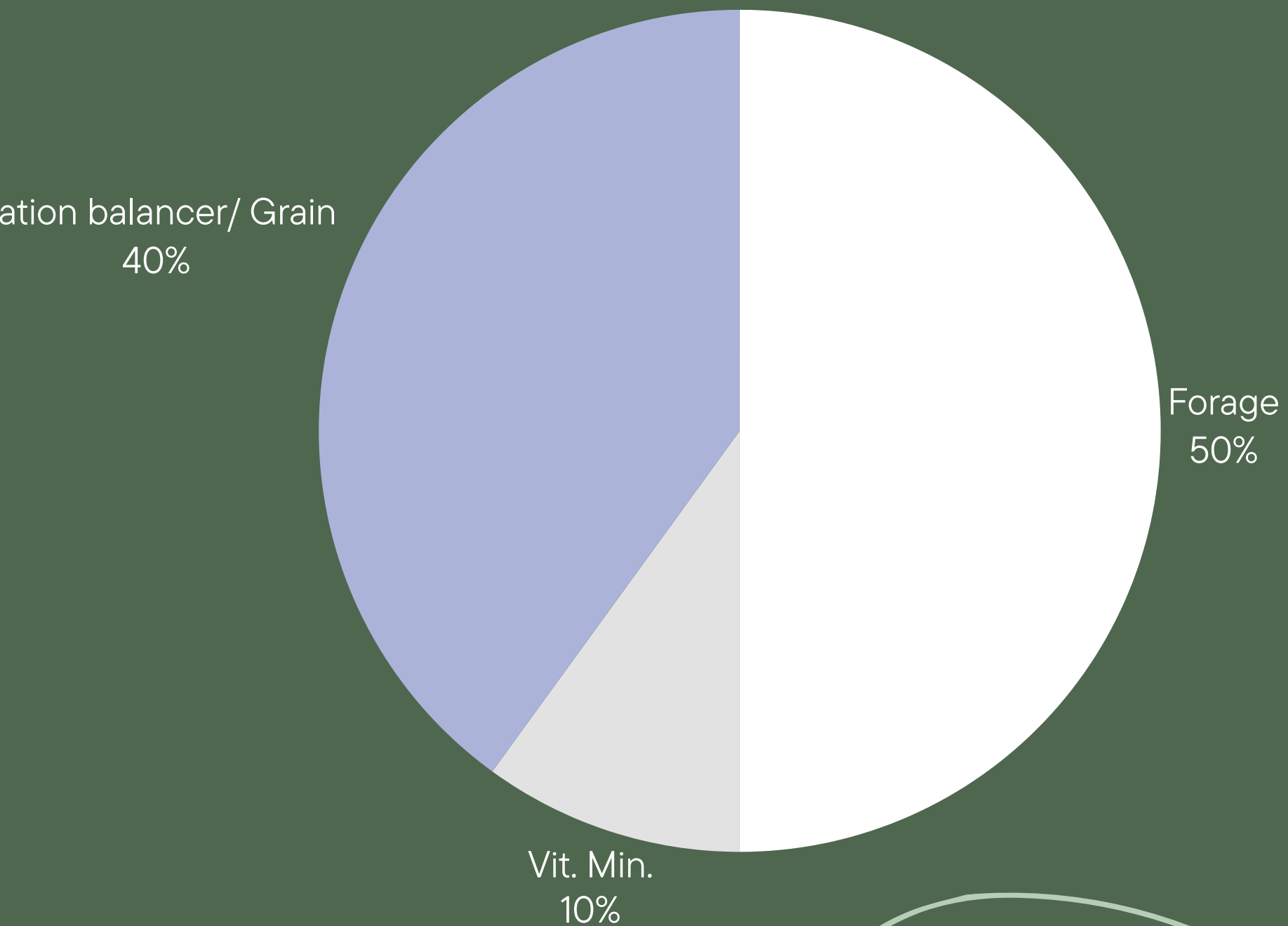
- Ration balancers are designed to be fed along with forages to horses that do not need additional energy (calories) from concentrates but do need additional protein, vitamins, and minerals.
- Ration balancers are a pelleted feed. They typically have low crude fiber and fat.
- Heavily fortified feed with small daily recommended feedings. The purpose of a ration balancer is to provide your horse with the essential nutrients that are insufficient in a forage-based diet.
- If your horse needs additional vitamins and minerals but not protein, then a vitamin/mineral supplement would be a more appropriate option.

Feeding concentrates

- Be sure to follow the feeding instructions on the label. They are carefully formulated to meet your horse's needs, but only if you feed the right amount. The label will specify how much to feed based on your horse's body weight.
- Feeds will say per pound. Make sure you weigh your scoops.
- If you have to cut back a horse's grain to below the recommended amount because it is gaining too much weight, then consider switching it to a ration balancer instead.



What does a balanced meal look like?



- For Maintenance, the average horse needs at least 1-2% of body weight, per pound of forage. In which that should be 50%-100% of their diet.
- The other possible 50% would be a vitamin-mineral supplement and possible ration balancer/grain depending on the type of forage.

What should I feed my horse?



First and foremost, clean fresh water daily. A good forage that fits their nutrition needs and a grain to help supplement any lacking proteins, carbs and fats.

There are multiple websites to give great advice and pointers to ensure your horse is well fed.

<https://www.standleeforage.com/tools/feed-calculator/>

And contact a Kentucky Equine Research nutritionist today for a free consultation.

https://ker.formstack.com/forms/ask_ker

And don't be afraid to ask your vet! As long as you have a current exam, most vets are able to perform nutrition consults over the phone!

Examples

Betty the barrel racer has a very athletic horse.

She feeds Alfalfa hay and a high-fat high-protein grain.

she supplements with a joint support combo.



Looking more in-depth on what she is feeding



Alfalfa hay

Fed at the proper portion, the protein content is met



Her grain of choice

Fats and carbs are met for the intensity level but lacking vitamins and minerals and has too much protein



Joint support supplement

Joints are supported but her horse receives no vitamin or mineral benefits

Does this horse
have a balanced
diet?

Sadly the answer is no, there is too much protein and is lacking vitamins and minerals.

Example

Todd the gelding is a pasture pet who lives in big green pastures. During the seasons when grass is unavailable she feeds Timothy hay. His owner offers no grain or supplements

They go on occasional rides



What is Todd missing from his diet?

Todd is missing vital vitamin minerals and even fiber in his diet. Todd needs a ration balancer added to his daily feeding as well as a fiber such as beet pulp



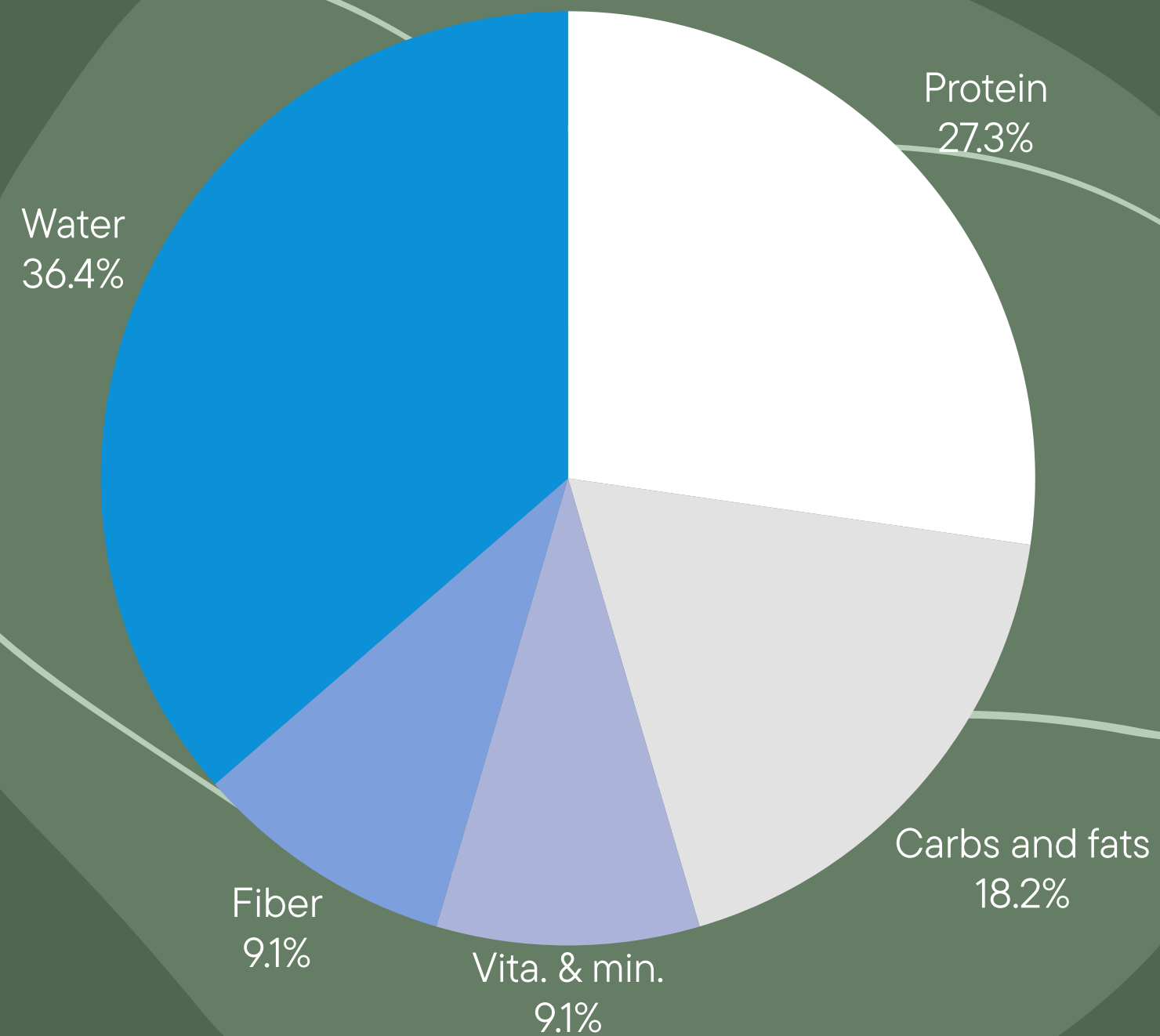
Skipper

Skipper a school horse that gets worked 4 times a week giving lessons to all types of riders.

He receives Timothy grass hay, a complete feed with a vitamin mineral supplement with soaked beet pulp and alfalfa pellets. He also receives a maintenance scoop of rice bran. he has a white salt block by his water bucket and receives a cookie after each ride.

Skipper is receiving a balanced diet for his workload

The peppermints don't help but he loves them!



What are some things that are missing from your horses diet?

●

Understand your horse's workload

Take into consideration breed and discipline

●

Access your forage

Ask for the hay analysis results

●

Select a grain

Select a grain that will help support your horse's workload needs.

●

Supplements

Supplement what is lacking or what the horse needs more support in



Thank you!