

The New Science of Feeding Your Horses



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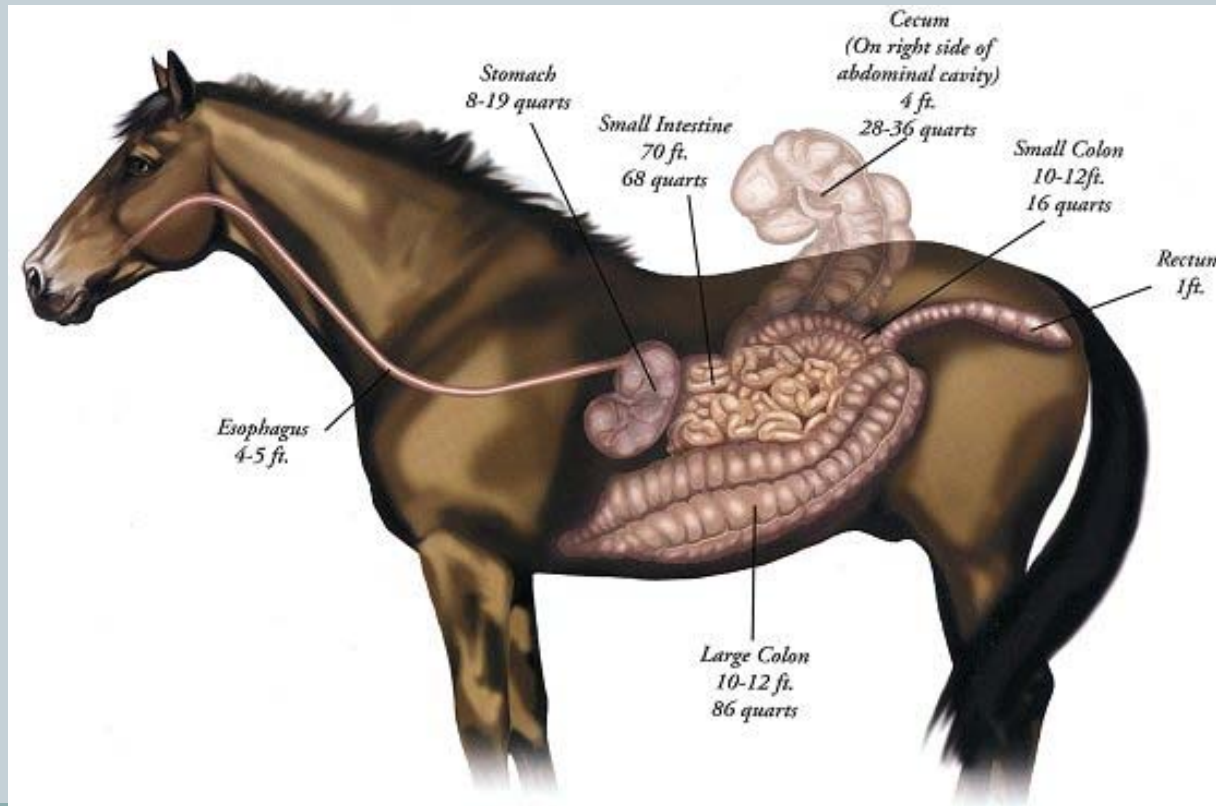
Outline



- Introduction-New Science
- How horses digestive system is designed
- How we can feed them to meet their digestive system
- What happens when that isn't enough
- Different feed products
- Special health conditions
- Summary & helpful suggestions
- Questions

New Science in Feeding Horses

- New science, or back to the way horses are designed to be fed?



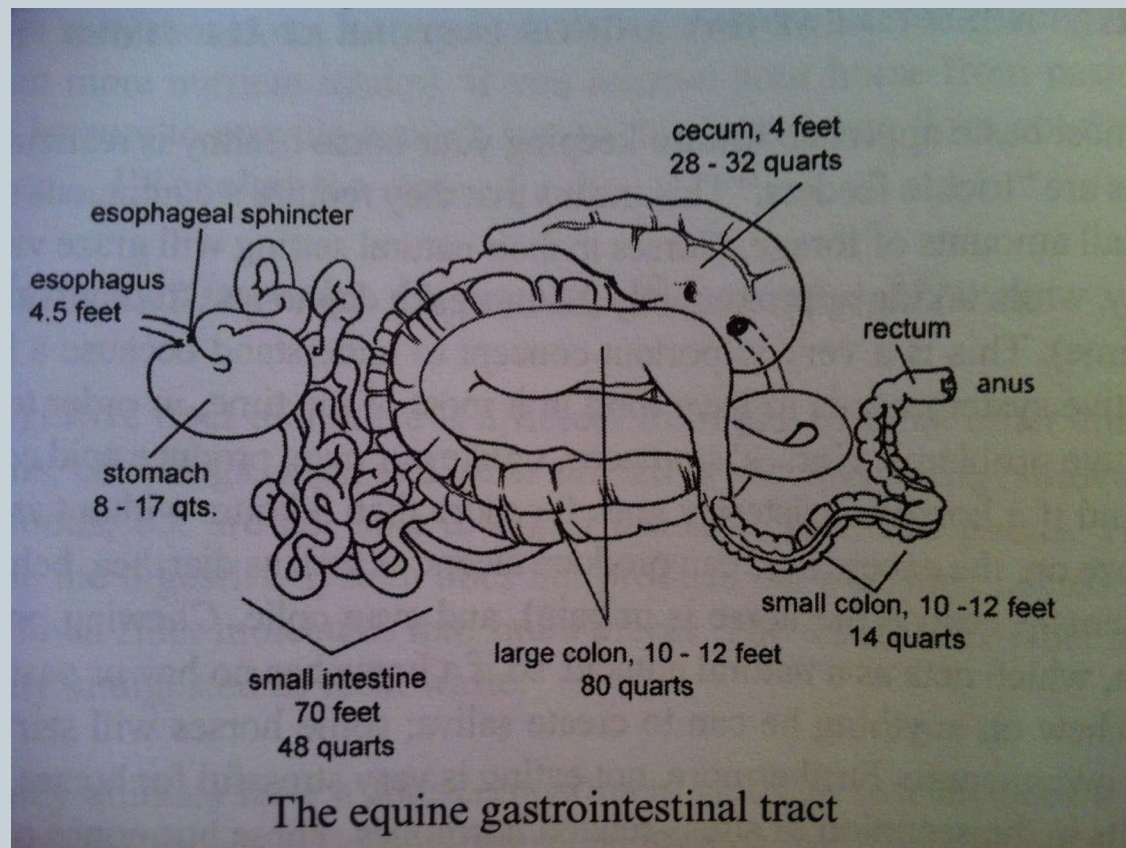


- Horse eating in stall versus grazing in field



How Horses Are Build

- GI Tract

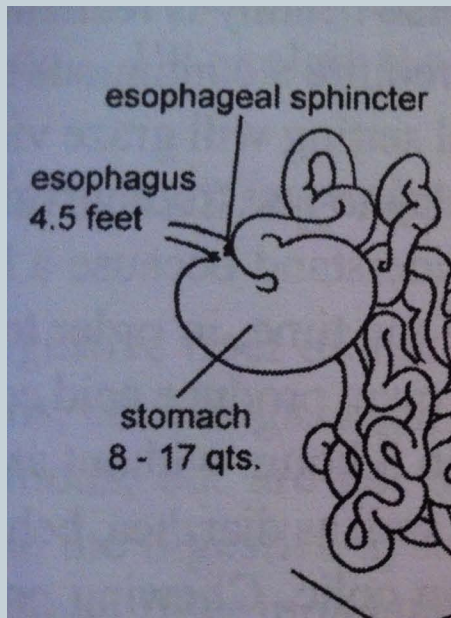


Mouth



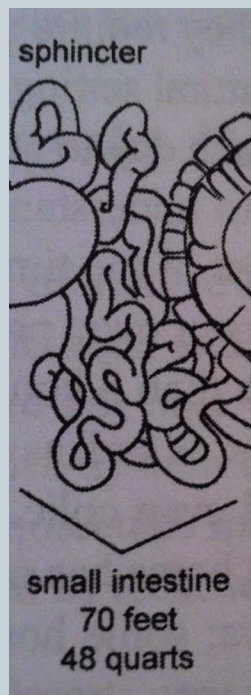
- Teeth
- Saliva-bicarbonate and enzymes
- Esophagus

Stomach



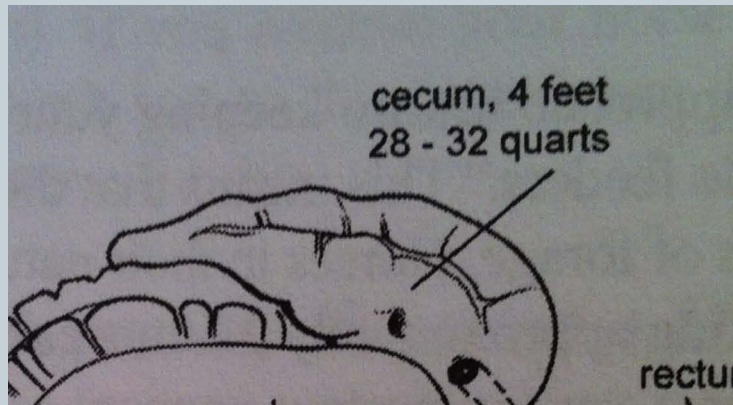
- Acid digestion
- Small in size
- Upper stomach isn't protected against acid--ulcers

Small Intestine



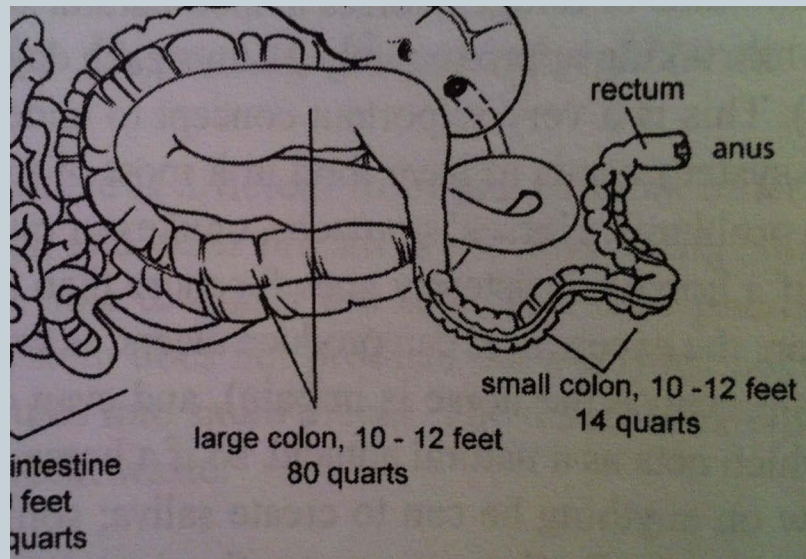
- Enzymes digest proteins, fats, carbs
- Fiber isn't digested here
- Too much starch and sugar can overwhelm S.I.

Cecum



- Fermentation vat-fiber digestion
- Microbes and “bugs” live here that make enzymes to digest fiber
- “Spill over” starch gets fermented—lactic acid-laminitis

Colon



- Reabsorption
- 2-2.5 days
- Energy, vitamins, minerals, water absorbed back in

Review-Whole GIT



- How can we best feed our horses to match the way they were designed?



What does a base diet then look like?



Forage Based Diets-key



- Pasture or hay is best base to diet
- Good quality, clean, dry forage can go a long way
- Blends of Alfalfa and Grass can be excellent for most horses—complement each other nicely
- Fed multiple times/day or free choice-if possible
- Feed Test standards:
 - CP 12-14%, ADF (undigestible) <30% , NDF <40-45%
 - 2:1 Calcium:Phosphorus Ratio

Mineral-Vitamin-Salt Supplementation



- Supplement salt, vitamins, minerals
- Selenium-Alberta
- Vitamins-are lost in hay
- Free choice hay
- Commercial vit-min supp



Clean Fresh Water



- Size of horse's gastrointestinal tract
- Make sure water is clean and fresh
- Snow often isn't enough



What to do when the base isn't enough?



- Poor keepers, horses in work or training, growing horses
- Need extra calories—but want to avoid too much grain



Grains



- High in calories, lots of carbs (starch)
- Small amounts are good-digested in small intestine
- Too much >4 lbs undigested grain becomes fermented in cecum—acidosis, colic, laminitis
- Oats-most common. Lowest in starch
- Easily digested in foregut
- Processing improved digestibility-steam, cracked, rolled.
- Whole oats-more likely to cause hindgut fermentation.

Fats



- Super calorie dense
- “Safer” way to feed calories—don’t have same ill effects on insulin levels, hindgut bacteria, laminitis risk horses, training behaviour
- Oils-canola, soybean, corn. Roughly same energy levels
 - Canola has best omega fatty acid profile
 - Subject to oxidization and become rancid-oxygen, heat, moisture
- Stabilized rice bran products
- Flaxseed meal

Comparison-Concentrates and Fats



- 1 kg of whole oats has 3.1 Mcal of digestible energy
- 1kg of barley grain has 3.3 Mcal of digestible energy
- 1 kg of canola oil has 9.0 Mcal (that's 9 million calories!)

Commercial Feeds



- Well balanced, good combination of grains, proteins, vitamins, minerals
 - Need to feed at recommended levels to get correct amount of vits/minerals. If feeding less—be sure to supplement vit/min
- Lots of variation in terms of recipe
 - How much grains/starch are in it—ask the feed company
- Recommend one with minimum 10-15% fiber, 12-14% protein for most horses
- Specialized feeds (foal starter, senior diets) can be a very good option

Beet Pulp



- Sugar beet plant by-product—sugar removed
- Not a forage but not a grain
- Virtually no sugar, lots of fiber (15%-almost as much as forage), highly digestible fiber in hindgut, solid calories
- Doesn't affect blood glucose levels in SI
- Low glycemic index, with almost the same amount of calories as oats
- Can be very useful for horses with metabolic disorders
- Soak-great way to increase water intake or to hide a supplement in

Bran



- By product from rice or wheat of the bran (endosperm removed)
- Very high digestible fiber
- Rice bran-high in monounsaturated fatty acids—good choice. Buy a stabilized product (rancidity and balances Ca)
- High in Phosphorus and low in Calcium—can throw off your horse's Ca:P ratio
- Can have a high starch content
- Avoid occasional bran mashes!

Overweight Horses



- Easy Keepers
- Ensure metabolic disease is ruled out
- Cut back/avoid starchy grains (laminitis...)
- Forage only diet is do-able
 - Limit alfalfa to no more than 20% in hays-stick with grasses
- Can use small amounts of beet pulp as a “carrier”
- Free choice hay/pasture can help!
- “Starvation diets” are counter-productive
- Be careful with treats

The tough keeper!



- Be sure to rule out any issues including dental problems, worms, ulcers, metabolic illness, stress, herd pecking order, etc.
- Ensure good quality forage is available
- Add calories-flaxseed meal, rice bran, canola oil,
- Small amounts of oats or complete feeds (2 lbs)
- Vitamin-Mineral supplement always!
- Consider B-vitamin supplementation
- Pre/Probiotics can help balancing the “bugs”
- Be patient

Insulin Resistant



- Common illness
- Can be a part of Cushing's disease, Metabolic disorder, overweight horses
- Insulin Resistance-body resists effects of insulin moving glucose into cells
- Goal in nutrition for IRs is to reduce insulin's output
 - Less starchy, sugary feeds
- Test hay-low NSC (carbs and starch)-below 12%
- No grains, complete feeds, rice bran, molasses, treats
- Beet pulp-usually okay, as are fats and low-starch feeds
- Beware of pasture

Summary & Helpful Hints



- Feed as much good forage as possible
- Be careful with grains
- Weigh out feeds
- Make any changes slowly and gradually
- Feed as many meals throughout the day as possible (free choice forage is great!)
- Supplement with salt, vitamins, minerals
- Be conscious of your horse's water
- Any questions-ask your nutritionist or veterinarian

Questions?



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