

Some Guidelines for NSC in feeds

Over the past number of years researchers have concluded that horses with conditions such as *insulin resistance (IR)*, *equine metabolic syndrome (EMS)*, and *polysaccharide storage myopathy (PSSM)* do best when consuming diets low in starch and sugar.

However, because something is true for some doesn't mean it's true for all. Low and ultra-low NSC complete feeds have a place but not for every horse. Some horse owners may be shopping for the lowest NSC feeds available when it isn't necessary or most appropriate. Most horses tolerate a moderate amount of NSC very well. What they don't tolerate well is obesity or a poorly balanced ration.

When determining the best product to meet the daily requirements of a horse, NSC is just one factor to consider. Of equal and probably more importance is calorie density (energy level) and a proper mineral/vitamin balance. Of course, the primary factor is always the forage. The forage is supplying essential fibre and often most of the dietary NSC, even on a high "grain" diet. For example, a diet that includes 6 pounds of Brooks Leading Edge (25% NSC) and 20 pounds of hay actually derives 60% of the dietary sugar and starch from the hay.

Sugar and starch content are measured in forages and feed products as WSC (water soluble carbohydrates) and ESC (Ethanol soluble carbohydrate) and starch. NSC is properly calculated by adding the starch and water-soluble carbohydrate (WSC) fractions of a feed together.

"However not all WSCs contribute to a blood glucose spike, because not all of it's absorbed into the blood stream from the small intestine. Some WSCs require microbial fermentation in the horse's hindgut, so they don't impact blood glucose in the same way. Ethanol soluble carbohydrate (ESC) captures monosaccharides and disaccharides that can raise blood glucose but far less than the microbial requiring sugars. Some argue that ESC combined with starch is what should be considered when feeding horses with metabolic conditions."

<https://thehorse.com/158171/low-nsc-horse-feeds-what-kind-does-my-horse-need/>

Some organizations and nutritionists refer to NSC as starch plus ESC instead of starch plus WSC. Since starch plus ESC is generally a lower number it can be confusing for a consumer looking for a low NSC product. When making a feed choice, consumers should ask industry professionals to be specific as to how they are measuring NSC.

Brooks nutrition advisors do not assume that the lowest NSC feed is always the most appropriate. Instead we take a more holistic approach taking into consideration the NSC but in the context of the horse's lifestyle, calorie requirements, mineral requirements, weight maintenance and other inputs such as hay or pasture. For example, an overweight horse does not need a couple pounds of ultra-low NSC feed that does not provide a balanced ration when one pound of a balancer pellet supplies the minerals and vitamins needed and less NSC. Conversely a horse badly in need of calories for weight maintenance will not do well on an ultra-low NSC feed that has a very low-calorie density. In simple terms "calorie density" is a

feed products ability to support muscle activity during exercise as well as the maintenance of normal body functions. The more intense the activity the more calories are generally needed. “Easy keepers” generally require fewer calories daily compared to “hard keepers.” A high calorie formula like Fibre O Plus has nearly 40% more calories compared to some ultra-low NSC products.

Amount vs. percentage. What really matters?

While there are no specific recommendations for the correct level of NSC in a diet, studies have offered some guidelines that Brooks Nutrition Advisors consider when balancing rations for different types of horses. By measuring the amount of sugar/starch consumed per meal we can recommend the minimum number of daily feedings to minimize the glycemic response and avoid potential problems. For example, a balancer pellet like Enhancer fed twice a day is well under the guidelines for a metabolically challenged horse. For a normal horse a high NSC formula like Phase III should be fed over at least three feedings to minimize glycemic response. These are guidelines that help to determine an “appropriate” choice of feed as well as how many meals should be offered daily. ***The important point is that the amount of NSC consumed at each meal is as important as the percent NSC of the feed.***

To provide some informed guidance to our clients and staff, Brooks has segmented our feed products into five categories ranging from very low NSC formulas like Fibrelite to “Optimized” formulas like Phase III, Pacemaker and 12%/14% Sweet feeds. At the same time, we have segmented the feed products according to their calorie density. If for example, a low NSC feed is required with a significantly high calorie density we can choose “reduced” NSC formulas like Fibre O Plus and Eeze that also have a high calorie density. Conversely where obesity is a concern a balancer pellet like Enhancer or All Phase 20 may be all that is required.

Brooks has a wide selection of products with varied NSC and “calorie density” values. A Brooks nutrition advisor can provide the expertise needed to find the right formula for your horse. The well being of your horse is our focus and commitment.