The Scoop: Feeding by Weight Rather Than By Volume

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Ask anyone how much they feed their horse, and they will usually answer with the number of scoops, quarts, cups, or coffee cans. Ask an equine nutritionist for feeding recommendations, and they will answer with how many pounds (or kilograms) to feed. Is there a difference?

What is a typical scoop?
Defining a scoop can be a challenge. A visit to a local farm supply store yielded 5 different types of traditional feed scoops. Take into account the commonly used ‘unofficial’ feed scoops—coffee cans, cups, yogurt containers, cut off milk cartons, soup cans, bowls, etc.—and the options increase even more. Feed scoops come in all shapes and sizes, and the amount of feed that each provides varies. Additional factors that may affect how much feed is measured by a scoop include the actual volume of the scoop, bulk density of the feed, degree of compaction of the feed, processing of the grains, and the person scooping the feed.

Volume versus mass (weight)
Feed scoops come in many shapes, and the volume of each differs. Volume is the amount of 3-dimensional space occupied by an object as measured in units (e.g., quarts, liters, etc.). Volume measurements listed for scoops are only approximate. This means that two 3-quart scoops actually may have slightly different true volumes; therefore, the amount of feed provided by each would likely vary.

The bulk density, or weight per unit of volume (e.g., lb/qt), differs from one grain to another. For example, oats and corn each will have different weights even if measured in the same volume. The bulk density of corn is usually much greater than that of oats. Volume measures (e.g., scoops, quarts, etc.) do not provide a consistent weight from one feed or grain to another.

The following table provides an example of weight versus volume measurements. In this example, a 3-quart feed scoop was used to weigh various feeds.

<table>
<thead>
<tr>
<th>Original 14 Cube</th>
<th>Original 14 Pellet</th>
<th>Original 14 Textured</th>
<th>Top Breeder</th>
<th>Finisher 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 lb</td>
<td>3.1 lb</td>
<td>2.9 lb</td>
<td>3.1 lb</td>
<td>2.7 lb</td>
</tr>
</tbody>
</table>

Not all ingredients are created equal. Beet pulp and wheat bran, for instance, are very light ingredients, while corn is a very dense, heavier grain. A textured feed containing beet pulp will often weigh less than an all-grain textured feed. Even the same grain, such as oats, will have varying weights depending on the quality and any processing (e.g., cracked, rolled, flaked). The higher the quality oat, the more it usually weighs. The following table shows the weight of various ingredients when measured using the same 3-quart scoop as above.

<table>
<thead>
<tr>
<th>Whole Oats</th>
<th>Steam Crimped Oats</th>
<th>Whole Shelled Corn</th>
<th>Cracked Corn</th>
<th>Beet Pulp</th>
<th>Wheat Bran</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.25 lb</td>
<td>3 lb</td>
<td>4 lb</td>
<td>3.75 lb</td>
<td>1.3 lb</td>
<td>1.4 lb</td>
</tr>
</tbody>
</table>
Scoop variables
Additional inconsistencies occur due to the slant at the top of many scoops. The slant makes it difficult to consistently provide the same amount of feed each time.

Person-to-person variation is yet another factor. Even when using a feed scoop that is easily leveled, the amount each person scoops often differs. Some people get heaping scoops, while others level the scoop, while still others pack the feed. How the scoop is leveled can further alter the amount of feed provided. Using a hand to swipe the scoop level versus shaking the feed level can make a difference, not just for how ‘level’ the feed is, but also how compact the feed gets in the scoop. One test of hand-sweep leveling versus shake leveling found nearly 0.25 pound per scoop difference with a pelleted feed. The following table shows the results of four people using the same feed scoop to measure the same textured feed. The difference was as much as 1.2 pounds.

<table>
<thead>
<tr>
<th>Person A</th>
<th>Person B</th>
<th>Person C</th>
<th>Person D</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2 pounds</td>
<td>3.5 pounds</td>
<td>2.3 pounds</td>
<td>2.75 pounds</td>
</tr>
</tbody>
</table>

A test of leveled feed (swiped by a hand) versus packed feed found nearly 1 pound difference, even though the same scoop was used. If a horse is receiving four scoops of feed per day, this could mean the difference between 8 pounds and 12 pounds of feed per day.

Knowing the horse’s diet
Ideally, every feed room would have a scale so that the feed could be weighed before each meal. This, however, is not practical for the majority of horse operations. A more realistic approach is to get a good estimate on the weight of the feed provided by the scoop. Most bathroom scales are not sensitive enough to accurately weigh a scoop of horse feed. Kitchen scales work well. If a kitchen scale is not available, then put a scoop of feed in a sealable bag. Take it either to the feed supplier or to the produce section of a grocery store (with their permission). Taking a few representative scoops in different bags will help provide an average scoop weight from which to work. If different people feed the horses at different times, take representative scoops from each person.

What about hay?
Hay is often fed in flakes, pats, sections, or squares. Like feed, nutritionists will quote the approximate pounds of hay a horse should receive. As much variation as there is in feed scoops, there is just as much, if not more, with hay. Balers usually provide a fairly consistent size bale within a lot (e.g. 50 pound bales), but are rarely able to provide consistent flakes within a bale, much less from one bale to another. The type of hay also may affect the flake size. Looking at three flakes from the same bale found weights of 1.2 pounds, 2.1 pounds and 3.3 pounds.

To find the approximate weight of a flake of hay, use a bathroom scale or put a few representative flakes in trash bags and take them to the feed supply store. Knowing the average weight of a bale of hay can also help in determining approximately how much hay is fed. If the average bale is 50 pounds, then feeding roughly half of a bale each day provides the horse with approximately 25 pounds of hay.

Summary
Knowing the amount of feed the horse receives each day is beneficial in many ways. Obviously, it helps to make sure the horse’s nutrient requirements are being met. It may also help in making the horse’s diet more consistent, particularly if multiple people are responsible for feeding. Providing the nutritionist or veterinarian with specific information about the diet is useful should the horse have any healthcare issues. From an economic standpoint, knowing the pounds of feed provided each day can assist the horse owner in budgeting their horse care costs. Most importantly, having detailed information about the horse’s diet is one step to ensuring a healthy horse.
Customer Focus:

Kentucky Equine Humane Center

Doing the Right Thing - One Horse At A Time

"Every horse has an owner. Every owner has a responsibility."

The Kentucky Equine Humane Center was founded in April 2007 with the goal of providing humane treatment and shelter while seeking new homes for all of Kentucky’s unwanted equines, regardless of breed—horses, donkeys, and mules. The Center will not turn any equine away. They work to educate the public and raise awareness for responsible ownership.

The Center is located on approximately 70 acres in Nicholasville, Kentucky and can house up to 50 horses at one time. Since its inception, KyEHC has taken in over 430 horses, with more calls coming each day. While the population can fluctuate weekly, they have housed several breeds, including Thoroughbreds, Quarter horses, Paints, Morgans, Tennessee Walkers, Pony of Americas, mules, miniature donkeys, and many of ‘unknown breeding’, just to name a few.

The goal is to find new homes for these equines, and the Center has a very successful adoption program. Upon arrival at KyEHC, the horses (and other equines) are evaluated for soundness, other health issues, temperament, and riding suitability. The equines are classified into two categories: riding horses and companion animals. The farm manager and volunteer crew work to ‘refresh’ the equines’ training, both on the ground and under saddle. This helps in best matching the horse with potential adopters. Companion animals are often the most difficult to place. While these horses are deemed unridable due to age or previous injury, they are otherwise healthy and can make great pets and babysitters. Adoption fees vary based on the equine’s age, health, amount of training, and experience.

Besides the adoption fees, KyEHC relies on donations and has several fund raisers, including an annual all-breed charity horse show. KyEHC relies on donated goods and services and donations from local businesses. For more information on adopting an equine or to make a donation, visit www.kyehc.org or call Lori Neagle at (859) 881-5849.

Have a house that needs a horse?
**Featured Product: McCauley’s Top Stud**

McCauley’s Top Stud is a highly palatable, pelleted supplement for breeding stallions. It is high in docosahexaenoic acid (DHA), a polyunsaturated, omega-3 fatty acid. The DHA in Top Stud is from a vegetable source. Increasing dietary DHA has been shown to increase sperm cell membrane DHA concentrations, which may help to improve motility and fertility in cooled and frozen semen.

Fatty acid composition within the sperm cell is important to their viability and fertilization potential. Sperm and sperm cell membrane are high in polyunsaturated fatty acids, particularly DHA and docosapentaenoic acid (DPA), an omega-6 fatty acid. Sperm with low DHA in the membrane have lower percentages of motile sperm following the freezing and cooling process. Increasing the DHA:DPA ratio in the sperm can improve sperm motility.

Horses get the precursors for both DHA and DPA in their diet. Equine diets are typically high in omega-6 fatty acids. Vegetable oils commonly used in feeds are high in the omega-6 fatty acid linoleic acid, which is a precursor to DPA. The major dietary DHA precursor typically fed to horses is flaxseed, which is high in alpha-linolenic acid (ALA). ALA can be converted to DHA. For some stallions, the mechanism for conversion of ALA to DHA or the actual DHA incorporation into the sperm cell membrane may be ineffective. The result is low DHA concentration in the sperm cell membrane.

In addition to a high DHA:DPA ratio, Top Stud also has a high DHA:EPA ratio. EPA, eicosapentaenoic acid, is another omega-3 fatty acid and is commonly found in fish oil. EPA may interfere with the efficient incorporation of DHA into the membrane.

For some stallions experiencing fertility issues, providing dietary DHA may be beneficial. Research has shown that stallions supplemented with high DHA resulted in increased DHA in the membrane, as well as an increased percentage of motile sperm after cooling or freezing.

Besides being high in DHA, Top Stud contains flaxseed, another omega-3 fatty acid source. Top Stud was also formulated with significant amounts of selenium and vitamin E, antioxidants which may improve cell wall integrity.

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**GUARANTEED ANALYSIS**

Crude Protein (Min) ................. 16.0%
Crude Fat (Min) ..................... 14.0%
Crude Fiber (Max) ................... 8.0%
Calcium (Min) ....................... 1.2%
Calcium (Max) ....................... 1.7%
Phosphorus (Min) ................... 1.0%
Selenium (Min) ..................... 2.2 ppm
Vitamin E (Min) .................... 1000 IU/lb

**INGREDIENTS**

De-fatted rice bran, vegetable oil product (feed grade), flaxseed, brewer’s yeast, brewer’s dried grains with solubles, yeast culture, selenium yeast, calcium carbonate, magnesium oxide, zinc oxide, manganese oxide, copper sulfate, ethylenediamine dihydriodide, cobalt carbonate, sodium selenite, vitamin A acetate, vitamin D3 supplement, vitamin E supplement, menadione sodium bisulfite complex (source of vitamin K activity), thiamin mononitrate, riboflavin supplement, niacin supplement, pyridoxine hydrochloride, choline chloride, folic acid, d-calcium pantothenate, and vitamin...