

Nutrition and Convenience in Cube Form

Imagine you're standing in the loft of your barn, lamenting the dwindling supply of hay. Snow and ice storms have made the trek to the regional hay sale nearly impossible. On the first clear sale day, you hook the fifth wheel to the truck and head off to the auction, hoping to bag a load of good-quality forage. When you arrive, however, there's no decent hay available. Hundreds of bales are stacked on rickety wagons; the bales are off-colored, some variation of yellow or brown, and dust flies from them when the twine is snipped and the hay shook out. Some of the bales smell suspicious—musty and moldy. What's a concerned horse owner to do?

If reputable hay dealers are not to be found in your area, there are alternatives to this classic forage form. According to KER equine nutritionist Kathleen Crandell, Ph.D., hay cubes are an option. "The most popular types of forage cubes are made from coarsely chopped alfalfa hay, timothy hay, alfalfa/grass hay, whole corn plants, and alfalfa hay/whole corn plants," said Crandell.

Horsemen derive numerous benefits by choosing hay cubes over more traditional long-stem hay. These advantages include:

- **Uniform nutrient profile.** Little variation occurs from one load of forage cubes to another load of cubes, especially when they are from the same manufacturer. Most cubes are made to certain specifications and offered to the consumer with established nutrient values. Generally, manufacturers must provide guaranteed levels of protein, fat, and fiber.
- **Less forage wastage.** Horses generally clean up hay cubes more readily than they do conventional hay. Because of their incredibly mobile lips, horses can easily separate the tender, palatable leaves from the stems in conventional hay. The stems are sometimes deemed undesirable by horses and are frequently left behind. Feeding studies reveal that as much as 20% of conventional baled hay may be wasted when fed, and forage wastage can reach an alarming 40% when large round bales are provided to horses. Feeding hay cubes in a container, such as a bucket or tub, also keeps them from becoming trampled and unpalatable, though horses are likely to retrieve spilled cubes off the ground.
- **Portion control.** When feeding cubes, it is easier to control the amount of forage the horse consumes. An axiom involving feeding goes something like this: horses should be fed by weight and not volume. Forage cubes make adhering to this creed more manageable because the weight of cubes is more consistent than the weight of traditional hay. A bucket of cubes one day will likely weigh similarly to a bucket of cubes the following day. On the contrary, four



flakes of hay may weigh significantly more or less from one day to the next. Weight of traditional hay depends on a variety of factors: size of flakes, density of flakes (is the hay packed tightly or loosely into bales), and type of hay (legumes tend to be heavier than grasses).

- **Less dust.** Hay cubes contain little dust, so they represent a healthy dietary choice for horses with respiratory problems such as heaves or chronic obstructive pulmonary disease (COPD) that are triggered and aggravated by environmental dust and particles. Even fleeting exposure to organic dusts can trigger bronchospasm and airway inflammation in affected horses and ponies, which leaves them with breathing difficulties.
- **Ease of storage.** Forage cubes are more dense than tradi-

A Squirt of Water, Please

Must hay cubes be soaked in water before feeding? According to KER equine nutritionist Kathleen Crandell, Ph.D., the answer is no. "Hay cubes can be fed dry once a horse gets used to biting off little chunks of the cube at a time," she explained. Hay cubes made especially for horses

are sometimes softer and easier to chew than those manufactured for cattle or other species.

Wetting the cubes should not be completely discounted, though. Esophageal obstruction, commonly known as choke, can be sidestepped when the cubes are sprayed liberally with water before they

are fed. "Cubes have a reputation for causing choke because of horses trying to eat them too quickly. If they are watered down, consumption is slowed and horses are less likely to have problems with bolting and choking," said Crandell.

Another benefit of wetting cubes involves increased water consumption. "Feeding cubes with water is one way to help ensure adequate water intake, which is sometimes essential in winter when horses drink less," noted Crandell.

Water can be poured over the cubes just prior to feeding. They do not need to be soaked ahead of time.



tional baled hay. A 50-pound bag of hay cubes takes up far less space than a 50-pound bale of hay. Approximately three bags of hay cubes fit in the area of an average-sized, square bale of hay. Therefore, forage cubes are ideal for owners with limited forage storage space.

- **Will travel.** Because they are condensed, hay cubes are easier to take on the road. Horse owners can pack more of them in less space when traveling to horse shows, rodeos, parades, or trail rides. Using cubes for horses that must travel frequently is a smart management technique, as cubes require less room, possibly avoiding a change of forage when away from home.
- **Chewable.** Horses grind long-stem hay with the teeth in the back of their mouths, called cheek teeth or molars. Horses sometimes have misalignment of their molars, which precludes them from properly masticating stemmy forages. Hay cubes are easier for these horses to chew.

Relatively few disadvantages turn up when hay cubes are fed.

- **Cost.** On a pound-for-pound basis, hay cubes are more expensive than traditional hay. Increased cost can be attributed to processing and expenses associated with shipping cubes from the point of production to the point of sale. The price of a 50-pound bale of top-notch alfalfa hay varies throughout the country, but likely does not come close to the cost of a 50-pound bag of alfalfa cubes. Interestingly, pure alfalfa cubes are usually cheaper than either timothy or alfalfa/timothy cubes.
- **Excessive intake.** Most horses cannot be given free-choice access to cubes as they sometimes can with medium-quality long-stem hay. Research has shown that voluntary intake of alfalfa cubes was much greater than for the same alfalfa fed as long-stem hay. Controlled feeding ensures that horses do not become overweight or incur digestive problems such as colic.
- **Palatability.** Most horses that refuse hay cubes do not have an issue with the taste of the cubes, but rather the texture. Some hay cubes are not designed to crumble easily. Horses must bite them with their incisors, the teeth in the front of their mouths, and then advance the pieces to the rear of their mouths, usually with their tongues. At first, some horses object to using their incisors for anything other than tearing pasture grass. The majority of horses, however, have few problems in figuring out just how to break the cubes into bite-sized pieces.
- **Speed of intake.** Mature horses may finish a serving of hay cubes more quickly than an equal weight of traditional hay. Without as much "chew time" horses may become bored and look for other outlets in which to release pent-



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up energy. Therefore, horses should be given plenty of time to romp and wander in pastures as well as time under saddle or in harness, if appropriate.

- **Choke.** The incidence of choke or esophageal obstruction increases when cubes and pellets are fed. Often, however, choke has little to do with the feed form and is related more to the speed with which the feed is eaten.

Hay cubes are appropriate for horses of all ages. Depending upon the plants from which the cubes are made, they are even suitable for broodmares and young horses because of their high nutrient values for energy, protein, and calcium. ☺

(Left) One advantage of feeding hay cubes is consistent quality. Like horse feeds, hay cubes must possess a guaranteed analysis, which assures continuity between bags. Hay cubes can be fed outdoors in troughs, replacing the feeding of round-baled hay.

An Eye on the Nutritional Aspects

Some horsemen refuse to consider hay cubes as a source of forage for horses, believing they are in some way inferior to traditional baled hay. In fact, few nutritional differences exist between alfalfa cubes and conventional alfalfa hay. Values for the primary nutrients are nearly identical. Check out the nutritional similarity of cubes and hay in the following table.

Nutrient comparison of alfalfa hay and alfalfa cubes on a dry matter basis.

	Dry Matter (%)	Digestible Energy (mcal/kg)	Crude Protein (%)	Calcium (%)	Phosphorus (%)
Alfalfa hay	90	2.48	19.9	1.28	0.21
Alfalfa cubes	91	2.43	18.8	1.46	0.25

Values for alfalfa hay were taken from Nutrient Requirements of Horses (1999), published by the National Research Council. Values for alfalfa cubes were provided by Equi-analytical Laboratories (www.equi-analytical.com), and data represent the average for over 300 analyzed samples.

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