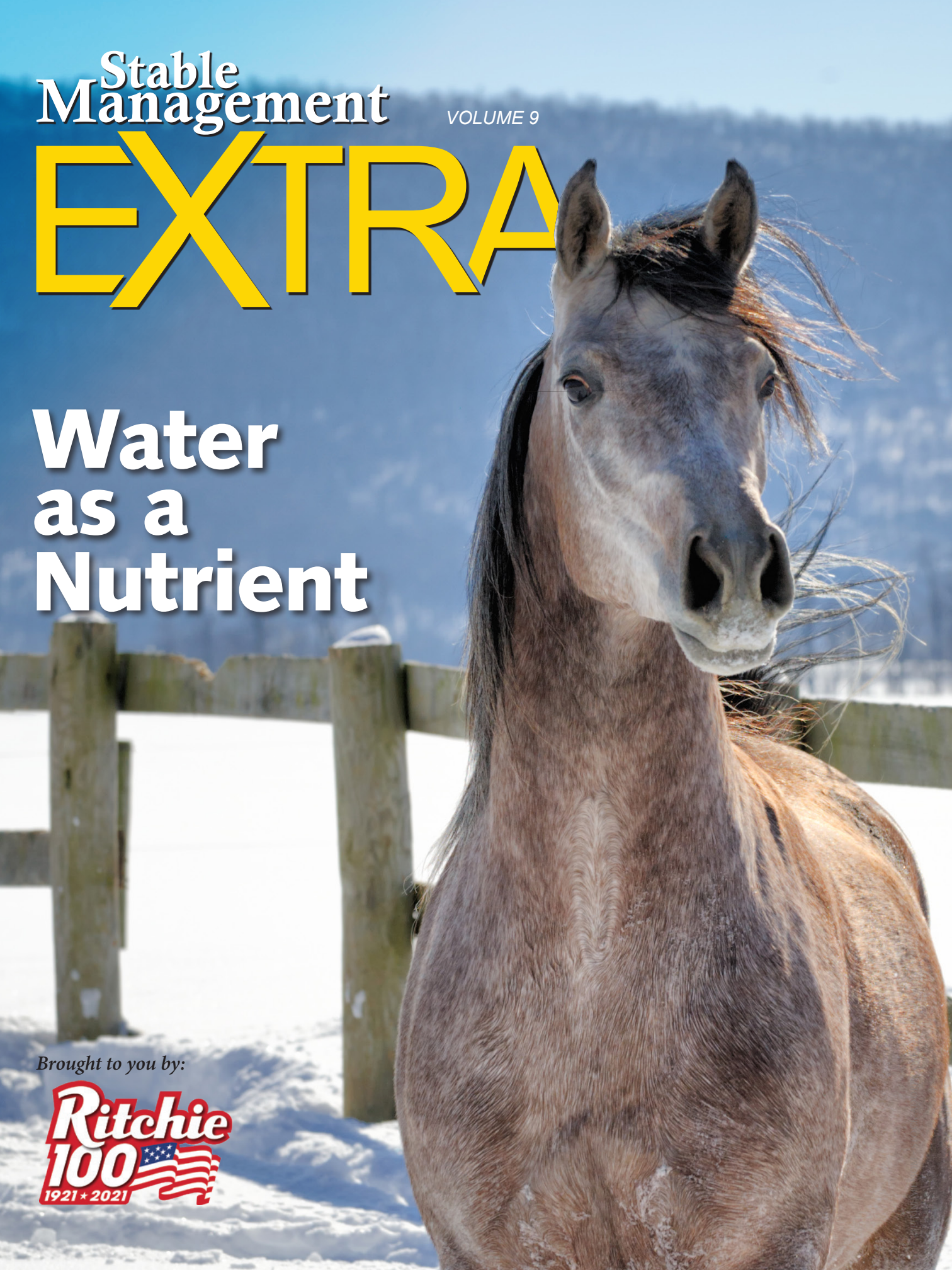
Stable Management EXTRA

VOLUME 9

Water as a Nutrient



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Ample water ensures sufficient saliva to lubricate chewed food and to prevent choke while also providing flud for digestion.

Water as a Nutrient

Water is a critical nutrient that can affect many aspects of your horse's health and well-being.

By Nancy S. Loving, DVM

If you think of the constitution of animals in a literal sense, horses are essentially walking vats of salt water on four legs. About two-thirds of a mature horse's makeup is composed of "water," which distributes throughout the body in various locations: a) in blood vessels and between cells, referred to as extracellular fluid (ECF); b) within the cells, referred to as intracellular fluid (ICF); and c) within an intestinal tract reservoir, which in the horse is 18-21 gallons of fluid. Body water continually shifts from these areas for normal body functions and replacement of losses in sweat, manure and urine.

Water is the most essential nutrient available to animals. Domestic animals can go for many weeks without food but cannot survive even a week without water. Sufficient fluid in the bloodstream maintains blood pressure and circulation. It is important for efficient intestinal digestion to generate energy and for transport and absorption of nutrients. Body water enables transport and excretion of wastes and is also important for regulation of body temperature through evaporative sweat.

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Snow should not be relied upon to provide enough water for a horse to remain healthy.

Most chemical reactions within the body rely on water. Body water is critical to maintain joint lubrication and hydration of cartilage, as well as to support lactation and gestational processes.

With dehydration the intracellular fluid volume diminishes as fluid shifts out of the cells into the extracellular fluid. Dehydration of just 2% can lead to deterioration in performance.

The Role of Body Water

It is important to offer clean water at all times to your horses. Digestion of the large amounts of fiber consumed each day requires large volumes of water to fuel normal metabolic processes and maintain body fluid levels. Drinking ample water ensures that a horse has sufficient saliva to lubricate chewed food and to prevent choke while also providing sufficient intestinal fluid amounts for digestion.

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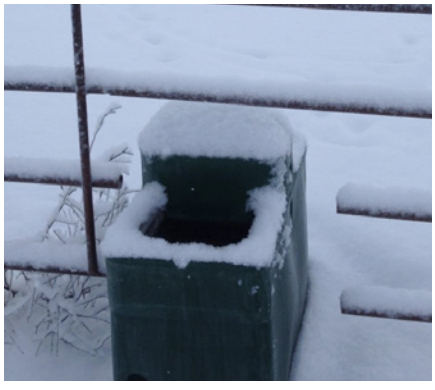
Water consumption depends on many factors, such as the animal's physical size and state, activity level, environmental temperature, dry matter intake, dietary constituents, and the quality and temperature of the water.

For every pound of food consumed, a horse needs two to four pints of water. Horses fed a straight forage diet drink twice the amount of water as horses on a grain-supplemented diet. The more hay and roughage provided, the greater the water requirements. A high-fiber diet is instrumental in holding water within the large intestinal reservoir, where it can be drawn upon during protracted exercise.

High-protein diets and salt supplementation tend to increase water needs. Hay and grain products contain low levels of moisture—about 10-15%—whereas pasture grass is likely to have a 60-80% moisture content.

Summer and Winter Needs

A resting horse normally consumes five to 15 gallons of water each day in temperate or cold weather, and up to 20 gallons a day in hot weather. Excessively hot weather, sweating and dehydration remove water from the bowels, effectively "drying" out the ingesta. Limited access to clean or ice-free water contributes to dehydration. The optimal preventive strategy to avoid dehydration is to provide clean, cool water at all times. Horses exercising in weather over 85 degrees Fahrenheit increase water intake by as much as 80% compared to intake when exercising in cool climates or at rest.



KIMBERLY S. BROWN

Horses will drink more water when it is cool and not icy cold, so using a heated automatic waterer or heating element in your tank is

Lactating mares have further increased water requirements of 50–80% more than maintenance to provide sufficient milk for their foals.

In wintertime, a horse requires plenty of fresh, clean and ice-free water available at all times. Snow cannot be relied upon to provide sufficient water. (Depending on the type of snow, 10 inches of snow melted makes about one inch of water.) Feed consumption decreases with lessened water intake; then a horse is at risk of developing impaction colic. Colic incidence ranges from 4-10% of all horses, and of these, about 10% involve an impaction.

Frozen water or even excessively cold water discourages drinking. In cold climates, water tank heaters keep water at an acceptable and preferred temperature—45-65 degrees Fahrenheit. Check that the heater doesn't short out and shock the horse with every drinking attempt. Even a mild electrical buzz will put a horse off water consumption.

Clean Water

Would you drink the water that is accessible to your horses? This caveat can serve as a guideline as to what to offer. Access to clean, palatable water is all-important. Horses tend to drink when they eat; some like to dunk their hay in water. Check water tanks for sand that settles out in the bottom of the tank—this can signal that horse mouths are full of sand, which is irritating to the bowel and can lead to colic events.

Clean horse drinking containers regularly to remove accumulated debris that could alter water taste as it decomposes and ferments. Frequent cleaning of tanks and water buckets also minimizes the chance of

Clean, fresh water encourages drinking, which promotes intestinal health.

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mosquitoes using it for a breeding habitat.

Clean, fresh water encourages drinking, which promotes intestinal health and normal peristaltic movement of intestines. Water quality can be affected by contaminants such as blue-green algae (cyanobacteria), bacteria, viruses, parasites, sulphates, nitrates, manure, and salinity or alkalinity. Water systems that filter out and avoid these kinds of contaminants are essential to providing clean water that encourages drinking.

The type of water container used can have an impact on how well a horse drinks water. Some horses prefer aluminum containers, some prefer rubber buckets and some prefer plastic. Others like a smaller container while some like the container big and full. Ample intake of water—an essential nutrient—promotes the overall health and body condition of the animal.

Evaluation of Hydration and Vital Signs

The hydration status of your horse reflects water intake and has everything to do with basic equine health. Knowing how to assess a horse's vital signs not only allows careful monitoring, but it also provides useful information to convey to your veterinarian if you suspect your horse has a problem.

Mental state: Carefully evaluate a horse's mental condition, alertness and response to surrounding stimuli.

Normal mental state = bright eye, perky ears and body posture, alert, reacts to or takes notice of offered food, noise, insects and other horses

Abnormal = depressed, lethargic, not interested in food, dull, sagging body posture, signs of pain, non-responsive to insects, noises, or other horses

Signs of pain or distress = pawing, flehmen (rolling of the upper lip), persistent rolling, abnormal vocalizing or snorting, facial grimace, biting at self, bucking and rearing

Rectal temperature: Lubricate the thermometer with petroleum jelly (or spit) before inserting either a digital thermometer or a standard glass-mercury thermometer into a horse's rectum. Leave the thermometer for about two minutes, or until it beeps. Stand off to the horse's side and face your horse's tail as you insert the thermometer to stay out of harm's way.

Normal temperature:

Adult = 97–101 degrees Fahrenheit

Foal = 97–102 degrees Fahrenheit

Abnormal temperature = >101 (adult) or 102 (foal) degrees Fahrenheit, especially in conjunction with change in mental state or showing signs of illness

Following exercise, rectal temperature should return to normal within 15–20 minutes.

Heart rate: Place the bell of the stethoscope just behind the horse's left elbow near the bottom of his chest. Listen to each lub-dub and count that as one beat. Then count for a minute (or count for 15 seconds and multiply by four). You can also take a horse's pulse by feeling the large artery under the jaw or from the artery in the fetlock.

Normal heart rate = 32–48 beats per minute (bpm)

Abnormal = heart rates exceeding 52 bpm and remaining elevated

Heart rate recovery following exercise should return to less than 60-64 bpm within 10–30 minutes, with the rate of recovery dependent on the level of exercise exertion.

Capillary refill time and mucous membrane color: Pull up the horse's lips to reveal the gums or gently pull apart a mare's vulva to expose the mucous membranes to evaluate their color. Push gently on the gums with the tip of your finger and count how quickly the pink color returns after blanching the membranes. This is referred to as capillary refill time (CRT).

Normal mucous membrane color = pink, similar to the color beneath your pinky nail

Normal capillary refill time (CRT) = less than two seconds

Abnormal = pale, purplish or bright red color, and/or CRT longer than two seconds

Hydration check: Pinch the skin over the point of your horse's shoulder or on the upper eyelid, then estimate how quickly the tented skin returns to flat.

Normal skin turgor = immediate return to normal

Abnormal = skin stays tented for more than two to three seconds and is slow to flatten (This test is only a rough estimate of hydration, and a delay in return to normal might also occur if a horse is thin and has little subcutaneous fat; if he is old; or when skin is wet.)

Intestinal activity: Use a stethoscope to listen to sounds over both flanks, two quadrants each side. Listen for at least 30 seconds to each of the four quadrants in the flanks.

Normal intestinal sounds = at least two big intestinal rumbles every minute or two

Abnormal = no sounds heard, or only occasional sounds heard, or infrequent sounds with gas (sounds like the ping of a penny dropping down a well)

Manure and urine output: Observe the number of bowel movements a horse has per day, the consistency and size of the manure piles, and how many urination spots there are. Take note of this information when the horse is acting normal to provide a basis of comparison in the future.

Normal manure output = eight to 12 piles per day, although this varies relative to the size of the horse and how much the horse is fed. **SM**

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