

the winter horse



-by Dr. Stacie Boswell

-photo by Stephanie Westover

You've probably seen the internet meme, "Winter is here: prepare for the annual blanket debate!" For now, we won't debate blankets. Instead here are a few ways that we know horses' bodies prepare for winter.

Our domestic horse species developed in Ice Age Iberia or central Asia, so horses have adapted through the millennia with specific physiologic changes allowing tolerance of cold.

WHEN IS A HORSE COLD?

A thermoneutral zone is when an individual is comfortable standing in dry, still air with a natural coat. Humans' thermoneutral zone is from about 75 to 85°F. Horses' thermoneutral zone may dip as low as 5 to 10°F, which is influenced by age, fat layer, and hair coat. If the weather is wet or windy, the thermoneutral zone will shift to a higher temperature – it's easier for them to be cold susceptible.

Horses will be cold if the weather is wet or they do not have access to a wind break.

HAIR

A horse's coat will change seasonally. The body's signal for growing additional hair is from the daylight hours. In autumn, as daylight wanes, horses begin to grow longer, thicker hair. How cold the weather is will influence how much hair grows. A horse's hair coat insulates so well that you may see unmelted snow on his back or icicles on his whiskers.

If you have horses of different sizes, you may have noticed that smaller horses or ponies will grow a thicker coat than larger animals. A larger animal will have a smaller surface area-to-volume ratio, which results in less loss of heat. Smaller horses and ponies can lose more heat, and therefore need more hair.

The hair coat is water-resistant in its natural state. Natural oils and the direction of hair growth causes precipitation to roll off and not collect in the deeper layers of hair. Hair next to skin stays dry and warm. The run-off is especially obvious on the longer, guard hairs at the back of the fetlocks, and if it's really cold, horses may get ice balls on the hair in this area.

A horse's hair coat should have piloerection (the ability of hairs to stick out – what people refer to as "goose bumps"). Piloerection adds a large volume of warm air trapped by the hair coat. That volume of air has an effect like thick down, and has excellent insulating quality. If a horse is blanketed, the hair coat may lose its fluffiness and be flattened, substantially decreasing its natural insulating ability.

Horses will be cold if their hair coat is too thin, too short (clipped), wet, oils have been removed (e.g. by shampooing), or if the coat is flattened.

CENTRAL HEATING SYSTEM

Horses digest their hay in their cecum and large colon – the hindgut. Roughage is fermented by microbes, with heat as a byproduct. On a very cold night, a little extra forage will keep horses warm by activating this central heating system.

Horses lowest in the social hierarchy may not have enough access to shared roughage (such as a round bale), and so their internal fermentation won't be able to provide as much heat.

Hungry horses are cold horses.

MUSCLE USE

Increasing movement on a short-term basis will increase body temperature. Many people notice that their horses are frisky in the cold. You'll see horses run, buck, and play. Blood flow increases to meet the oxygen and energy demands of the muscle, and the large muscle groups create heat as they contract. These same large muscle groups are involved with shivering, which is a specific adaptation of warm-blooded animals to maintain core body temperature. Muscle contractions and increased circulation helps keep the body temperature stable and warm.

Many factors alter the ability of an individual equine to manage in the cold. His hair coat, digestive system, and muscle use help him stay warm.

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