

## Sand Colic: A Preventable Problem

Hinder sand build-up in the horse's digestive tract through proper management.

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In the sandy soil areas in the Southern U.S. as many as 30% of all equine colic cases have been traced to sand buildup in the GI tract. Poor management practices have been suggested as a major factor in these types of colic; however, few controlled experiments have been done to determine sand intake causes, or the effectiveness of the management and veterinary sand removal methods being used. This article summarizes seven separate trials which were conducted over a 5 year period at the University of Florida, including a 12 month field study and many controlled experiments with 4-8 horses each. Sand intake and feeding or treatment conditions were strictly controlled and voluntary sand intake or fecal sand output levels were measured.

Here is a brief description of the trials and their results:

### Farm Field Trial

Grab fecal samples were taken from more than 30 horses on five local farms over a one year period. There was a high horse to horse variation in the percentage of sand found in the feces, with some horses having consistently higher amounts. There were no seasonal or farm differences. Some of the farms were feeding their horses in buckets or tubs on open sandy areas. No sand colic cases were reported during the collection period.

Photo by Jill Haight

### Controlled Sand Removal Trials

Controlled sand removal trials using mature horses (8 horses in two trials): Six treatments were tested over the two trials including dosing with mineral oil via stomach tube, single feeding of wheat bran, feeding of psyllium either one time or daily for 6 days, and feeding 1.5 or 2.5% of body weight (BW) hay. In all cases the "control" or basic feed ration was the 1.5% of BW of coastal bermudagrass hay (15-20 lbs for 1,000 to 1,300 lb horses) and sweet feed supplementation which met each animal's nutrient requirements. Sand (300 or 500g, approx. .7 or 1 lb) was given with water to each horse via stomach tube just before the oil, bran and psyllium treatments were applied. There were no statistical differences between these treatments or the control in their ability to remove the sand.

Sand outputs peaked mostly on day 2 post-dosing/treatment and 45-95% of the sand was recovered in the feces by 5-6 days post-dosing. The horse to horse variation was large; however, the 'control' (hay only) treatments consistently removed the greatest total quantity of sand and the 2.5% BW hay treatment removed almost twice the sand (95%) by day 6, as the other treatments. Feeding of psyllium 2x daily (about .5 lb of psyllium per day) for 6 days appeared to suppress sand passage through the tract. Psyllium has been reported in the veterinary literature since the 1970's as being useful to remove sand from horses' GI tracts; however, a review of these reports show that each of them were of a few individual animals already exhibiting sand load symptoms and each was treated by stalling and dosing with psyllium. No control animals were ever used to compare with the psyllium in any of these reports. The trials reported here indicate that if the animal is removed from further sand intake then normal feeding (with or without any treatment) would remove the sand. One recent paper with a control but a different technique found that psyllium had no effect on sand removal just as our trials have found.

#### Controlled voluntary sand intake trials

Controlled voluntary sand intake trials using mature horses (4-8 horses/4 trials): management factors including eating grain (sweet feed) on sandy surfaces, eating different kinds of hays on sandy surfaces, varying the hay to grain ratios from 0.75 to 2.25 and feeding diets deficient in either or both energy (75% of requirement) and protein (70% of requirement) were studied. The greatest sand intakes (up to 1-2 lbs per feeding) occurred when the horses ate their grain ration directly on sand or retrieved grain dropped onto a sandy surface. But the amount of sand taken-in varied greatly from horse to horse. photo by Natasha Brownfield  
Studies have shown that traditional methods of preventing sand colic are no more effective than simply feeding an adequate amount of hay. Some horses were observed taking in pounds of sand each feeding in their attempts to retrieve every kernel of their grain ration, while other horses stopped eating once they got to the sandy surface and therefore took in much less sand.

This individual horse difference might account for why on the same farm under the same feeding conditions one horse might accumulate heavy sand loads, and thereby, be more likely to get sand colic while others do not. Unexpectedly, literally no sand was taken in when grass hay (Coastal bermudagrass) was fed on dry, sand surfaces, and only small amounts with legume hays (alfalfa or perennial peanut). Also, some individual horses had large voluntary sand intakes (sand was offered free choice in a bucket) on the trials looking at various hay to grain rations and energy/protein deficiencies but no treatment differences were found. As reported

previously in the literature, some horses were observed to eat their own feces when on low protein or low forage diets. Diarrhea has been reported in the veterinary literature as a common occurrence in horses carrying heavy sand loads in their GI tract; however, no diarrhea was observed in any of these trials.

### Take Home Message

First, it is very important to reduce or help prevent sand intake by not feeding grain where it can come in contact with sand. This is especially important for individual horses that appear to search-out and consume every dropped kernel, whether their own and or dropped grain from others in their feeding group. Placing rubber mats which are kept free of sand under feeding containers should help keep grain separate from ground sand. Apply special sand avoidance management to those individual horses that appear to consume sand of their own volition by stalling them in matted stalls and turning them out only in paddocks with good grass cover. In some cases you may want to evaluate the diet you are feeding—it might be insufficient in fiber/hay, major nutrients, or out of nutrient balance for your horse. In some areas like Florida, it is almost impossible to keep a horse free from some sand intake. Therefore, the most effective and economical method for keeping sand moving through the horse's GI tract and to prevent sand buildup is to make sure that their daily feed ration contains a minimum of 1.5% BW hay intake (15 lbs/1000 lb horse). Feeding of 20+ lbs (2+% BW) is even more effective and free choice feeding of the forage (pasture or hay) is the best and most natural and has many behavior benefits. If you know that a horse has taken in and is carrying an excess sand load, then it is best to remove the horse from access to any sand and keep it on an ample hay diet for a period of a week to give the accumulated sand time to be evacuated. No advantage was found for applying the three common sand removal treatments tested (mineral oil, wheat bran or psyllium) over a diet of sufficient hay. So save your money trying to use these methods and put it into buying more hay!

### PERCENTAGE OF RECOVERED SAND BY TREATMENT METHOD AT 5-6 DAYS POST DOSING WITH SAND

The most effective way to prevent sand colic is to provide horses with 1.5% to 2.5% of their body weight in hay daily. For example a 1,000 pound horse should be provided with a minimum of 15 to 25 pounds of hay each day.

### Publications:

Lieb, S. 1997. Sand Removal From the GI Tract of Equine, Proceedings of the Fifteenth Equine Nutrition and Physiology Symposium, p.335.

Lieb, S. and J. Weise. 1999. A Group of Experiments on the Management of Sand Intake and Removal in Equine. Proceedings of the Sixteenth Equine Nutrition and Physiology Symposium, p.257.

Weise, J. and S. Lieb. 2001. The Effects of Protein and Energy Deficiencies on Voluntary Sand Intake and Behavior in the Horse. Proceedings of the Seventeenth Equine Nutrition and Physiology Symposium, p.103.