Access to Pasture is of Benefit to Horses in Training

*The following is a report supplied by Dr. Chris Rogers of Massey University who recently completed a research project on "The relationship between diet and faecal pH in horses" which was funded by the NZ Equine Research Foundation.

The management of horses in New Zealand has a number of unique features including the free access to pasture for many equine athletes. This is in stark contrast to management practices abroad where access to pasture is often severely limited.

Previous studies of faecal pH in horses have been based on overseas management systems. No studies have been conducted to reflect the management of New Zealand horses. Therefore, the main aim of this study was to model the feeding regimes of New Zealand horses and study the effects of grain supplementation on faecal pH.

The intensive feeding of horses can increase the risk of a variety of complaints including gastric ulcers, colic and laminitis. In racing stables, horses are often fed a few large meals of highly soluble carbohydrates (grains). Sometimes, because the volume of grain is too great to be fully digested in the stomach and small intestine, some of it will reach the hindgut. Here it undergoes fermentation and we know that fermentation of grain in this area of the horse's gut can be a causative factor in the production of laminitis, a painful condition of the horse's feet.

We can measure indirectly how much fermentation occurs in the hindgut by measuring the acidity (pH) of the faeces. For horses that are continually confined to the stable we know that there is a close relationship between how much grain the horses is fed and the acidity of its faeces. What we do not know is if this relationship is the same for horses at pasture. To investigate this we supplemented horses kept at pasture with two daily meals of grain at a level equal to the amount of feed received by a typical racehorse in full work.

Before starting this experiment we needed to know that the measurement of faecal acidity was reliable for horses at pasture. We did this and found that the acidity of the faeces did not alter if the feeding was consistent.

To test if faeces became acidic with the addition of grain to the horse, we started feeding crushed oats to the horses, increasing the size of the fed by 0.5kg per day until we were feeding 3.4kg of oats per day. We kept the horses at this level for 6 days and then increased the feed to 6.16kg per day for 5 days. Throughout the trial the horses were kept at pasture and had free access to water.

Surprisingly we found that the acidity of the faeces did not change as the horses were fed increasing amounts of grain. Faecal acidity, however, did change when the pasture growth increased after rain. We also found that

each horse had its own unique faecal acidity. This we believe to be due to the differences between the horses in the number and type of bacteria present in their hindgut. This is an important finding as it provides a possible explanation why some horses are more prone to laminitis than others when kept under identical management conditions.

As a result of these studies, we believe that access to pasture has a positive effect in preventing hindgut fermentation. The opportunity to almost constantly pick at grass mimics the horse's natural environment possibly encouraging increased saliva production and a longer gastric and small intestinal phase of digestion. All of these are known to neutralize acidity.

A direct recommendation from the results of this study is that horses fed large quantities of grain should have access to pasture to minimize the possibility of hindgut acidosis.