

REPORT ON THE SAFERGRASS CLINIC IN VICTORIA

by Gail Bateman, AEBM President



The Safergrass Clinic conducted on January 13th 2007 at the McMillan Campus, Warragul was hosted by Jenny Moncur and presented by Kathryn Watts an agricultural scientist from Colorado, US. Kathryn told how as a researcher and also a horse owner she came to explore the quality of grass for horses after her own experiences of laminitis and founder with her horses.

Her information was illuminating and dispelled a lot of myths and also opened the doors to thinking about how we need to tackle feed problems for horses in Australia and plan for a better future.

‘Improved’ grasses have been bred for fattening cows and sheep or supporting them to produce milk and are therefore just not suitable for your average pony or hack. They are just too high in sugars (non structural carbohydrates – NSC’s) for horses to metabolise as horses have a different digestive system. As a result many horses develop metabolic disorders that are similar to Type 2 diabetes in humans, including insulin resistance. This includes cresty neck and fat deposits and eventual laminitis in the so called ‘good doer’. Alternatives like native grasses, which are low in NSC sugars cannot take the intense grazing of the land, which is the way that most horses are kept.

Another revelation was that green lush grass does not necessarily mean grass high in sugars. It is stressed grasses that are high in sugars (NSC’s) eg in dry situations, even straw can be very high in sugar. Temperature also plays an important part in the sugar content of grass and frost/ cool temperatures can make the sugar content high. Carrots and apples are high in sugars and should not be fed to horses either!

To manage laminitis and founder it is important to make sure that the grass they get is not stressed – so that it needs to be fertilized and receive enough water (irrigated) to keep the sugar content down. The grass should be strip grazed before seed heads develop and mowed to encourage leafy growth and not seeding. Time of the day is also relevant to carbohydrate content and Kathryn grazes her own horses 1-2hrs after dawn.

Kathryn tests her hay for carbohydrate content, and this is relatively cheap in the US but quite expensive here. Grain based supplements or oaten chaff are a unsuitable as they are high in NSC’s, however beet pulp is a good substitute and also copra, soybean and lupin hulls. Lucerne chaff can also be used for horses that tolerate it.

Supplements are also important to balance the diet including trace minerals like cobalt, copper, selenium, chromium, zinc and magnesium.

Kathryn suggested that we approach our own agricultural research centres to research pastures suitable for horses in the Australian environment, and to try to get interest for funding these projects. Anyone who could produce low carbohydrate hay would get a premium for this product and could probably never sell enough as the demand will be high.

Some key point notes from the clinic:

- The enemy is Non Structural Carbohydrates (NSC's - water soluble sugars and fructan)
- The level of NSC at any given time for a given species cannot be taken out of context from the environmental conditions that produced it.
- High NSC's in grass encourages animal to eat it and hence spread the seeds.
- Pasture can change dramatically with cold nights and sunny days.
- Clover is generally lower in NSC but clover runners are full of starch. Dandelions, wild oats and plantain have more fructans than grass and are high in NSC.
- Below 5 deg C all night is the danger period with a previously cloudy day the sugars are lower but the nitrates are higher.
- You should be most concerned when the nights are repeatedly under 5 deg C with nice sunny days.
- The forage industry is driven by the needs of the dairy/cattle industry. Pasture grass is usually selected for grazing cattle and it generally has a high sugar & fructose content. It grows for longer, is drought tolerant, better for silage, has better regrowth properties, winter hardiness and palatability.
- A horse is not a cow! Meat cows are fattened to be eaten at around 2yo. Dairy cows are kept pregnant & milking and are usually retired around 7 or 8yo.
- NSC in cows- cows are foregut fermenters and NSC's are utilized before it hits the stomach.
- Excess NSC in a horse – Horses are hind gut fermenters and the NSC's hit the small intestines first, creating aglycemic response. Fructan is non-digestible and must be fermented in the gut.

Factors affecting NSC content in forage:

- Genetic potential
- Temperature
- Water
- Nutrients
- light intensity
- time of day
- stage of growth
- Photosynthesis – $\text{Co}_2 + \text{water} + \text{sunlight} = \text{sugar}$

It is about weather – NOT season:

- Nutrient deficiency = higher NSC
- Nitrogen deficiency can = higher sugars
- Stressed grass is higher in fructan and sugar
- Better to have fertilized (balanced soil mineral content) and irrigated grass as it is lower in sugar per mouthful. Grazing time must still be limited on grass.
- Shade limits the production of sugars – graze high risk horses in the shade (plant trees)
- Pay careful attention to pasture management.
- For grazing, use the time of day effectively – best time is 3am to 10am.
- The seed head and base/roots of the grass is the highest in NSC. Horses are better to graze the leaf and not seed heads. Less sugar per mouthful if you cut the grass before the development of the seed heads.
- Dead grass can cause laminitis as sugar/fructans are NOT green. NSC stays in the grass until rain (or snow) leaches it out.
- Native grass has ½ to 1/3 of NSC's of improved grasses. Saltbush is good for protein and low in sugars.
- Low moisture + low nutrients = HIGH NSC.

You want low NSC hay, which is:

- From unimproved native grass
- Grown in optimum fertile soil
- Grown under optimum temperatures for that grass
- Grown under optimum moisture for that grass
- Cut for harvesting early in the morning
- Cut when it is all leaf or very mature

Forms of carbohydrate intolerance:

- Insulin resistance (IR)
- Equine Polysaccharide Storage Myopathy (shivers)
- Tying Up – Monday morning disease
- Behavioural problems (high sugar diet)

When dealing with Insulin Resistance:

- Manage the diet (obesity alone can cause IR)
- Manage the lifestyle (particularly movement)
- Correct any mineral deficiency
- Seek diagnosis & medication if necessary

Exercise is a preventative measure – 30 min of exercise 3 times a week was shown to make a significant improvement in insulin sensitivity in ponies after 2 weeks and that improvement lasted 6 weeks after the exercise stopped.

IMPORTANT:

- Feed low NSC hay and NO grain. 'Low carb' feeds may just be a little lower but still a problem. Avoid feed with all grains and molasses.
- Do not bed on straw as it can be high in NSC's.
- NO high NSC treats – including apples, carrots and many fruits.
- Green grass is higher in sugar than hay. Some horses/ponies require a dry lot existence with low NSC hay. Also useful is strip grazing and the use of a muzzle.
- AVOID grain hays – oat, wheat, barley and rye. Hay can be soaked in water for 30 – 60 minutes as the sugars are water soluble. Do not re-use the water or allow horses to access it for drinking.
- Choose hay cut after cloudy weather and avoid hay cut after frost or in drought.
- Correct any mineral deficiencies, particularly trace minerals such as copper, zinc and selenium (for thyroid function), cobalt and magnesium.
- Hay does not lose sugar over time (aged) but does lose vitamin A.

What are the signs of diet success?

- Decrease in laminitis events
- Softening of fat pads and neck crest
- Less swelling under sheath
- Less pathological hunger
- Less thirst/urination

So what does Kathryn Watts feed her 2 founder horses ?

- Access for 1-2 hours on irrigated pasture at dawn except after frost.
- Native grass hay (tested) with 8% NSC & 8% protein.
- 2-3 pounds of Lucerne with 8% NSC & 20% protein.
- 3 oz freshly ground flaxseeds (linseed).

For more information check out Kathryn's website www.safergrass.org . Kathryn has DVD's for sale on her website and she will probably return to Australia for more seminars in the near future.