The reasons that domesticated animals develop obesity are generally similar to those reasons that have been attributed to obesity in humans. Modern-day husbandry practices are characterised by the imbalances between energy intake (energy-rich feeds) and energy expenditure (inactive horses).

In humans, obesity is associated with insulin resistance (IR), type-2 diabetes and cardiovascular diseases. In horses we also encounter IR, but rarely the other disorders. It is important to realise that obesity can cause IR, but not all IR horses are obese, it can occur in thin horses as well. However, in horses IR has been linked to other specific disorders, such as laminitis, hyperlipemia (hepatic lipidosis), developmental orthopedic disease (osteochondrosis) and pituitary pars intermedia dysfunction (Equine Cushing’s Syndrome).

IR is a condition in which normal amounts of insulin fail to maintain normal blood glucose because of decreased responsiveness of muscle (glucose uptake), liver (inhibition of gluconeogenesis) and fat cells (inhibition of lipolysis). That obesity doesn’t necessarily have to cause IR was also supported by one of the contributing papers of the AESS. Mr. Bamford (Vet Sci student from the Melbourne University) and colleagues looked at the effect of increasing adiposity (fat deposits) on insulin sensitivity in horses and ponies.

The researchers used 6 adult Standardbred horses, 6 mixed breed ponies and 6 Andalusian-cross horses in their study. Two horses of each breed were assigned to one of the three different diets they tested. The groups of horses were offered a high fat diet (FAS; to cause a glycaemic and insulinemic response) and a basal diet with no supplementation (CON). The study period lasted for 21 weeks and they measured the percentage of body fat, body condition score (BCS) and insulin sensitivity (IS) over this time. The horses from both the FAT and FAS group had a significant increase in percentage of body fat and BCS, while the CON remained unchanged.

They also found that the IS did not change significantly in the FAT and CON group, but there was a significant improvement in the SI in the FAS group.

The authors suggest that increasing adiposity alone did not cause IR when animals are fed a high fat, low glycaemic diet. This has also been seen in humans, not all obese people have IR or diabetes, as not all fat deposits contribute to this disease.

In human studies they discovered that fat distribution in the body is important for the progress of the disease. Thus, abdominal fat is more important in relation to IR than subcutaneous fat and the reduction in abdominal fat can increase the sensitivity of insulin in humans. This something that is not very clear yet in horses. But the current study did show that short-term glucose/insulin peaks might slightly improve insulin effectiveness in horses.
Nevertheless, careful dietary changes have to be made and must go hand in hand with an exercise program to reduce adiposity as obesity may remain a risk factor for horses independent of IR. The abstract of this study by Bamford, N.J., Potter, S.I., Harris, P.A., and Bailey, S.R. 2012. Effect of increasing adiposity, can be found in the proceedings of the Australasian Equine Science Symposium 4; 19.

Research & Hendra
This year there were also some papers and updates on Hendra virus. In particular the status of the Hendra virus vaccine for humans and horses was discussed. Another paper that was presented and attracted quite a lot of mainstream media attention and debate suggested that hungry horses could be more susceptible to contracting Hendra virus.

- Last some background - Hendra virus is a member of the Henipavirus. Fruit bats or flying foxes (genus Pteropus) are carriers of Hendra virus. Researchers assume that Hendra virus is transmitted from bat-to-horse through the ingestion of infected objects such as fruit, plants and other feed or water sources contaminated with urine, faeces etc.

Horses are grazier and browse for up to 16h per day, which means that they have the potential to ingest bat related material. So there is no need to go out and start overfeeding your horses during non-growing seasons, as you can read above it may create obese horses – another issue we want to avoid!

The abstract of this paper by Anderson, D.L. & Bryden, W.I. 2012. Does pasture availability influence Hendra virus infection of grazing horses? can be found in the proceedings of the Australasian Equine Science Symposium 4; 14-35.

Nutrition & Health
I have been addressing foraging behaviour in earlier articles in the Horses and People Magazine, and this year I was able to present my PhD proposal on this topic at the AESS.

We all know that foraging and feeding behaviour comprises a large part of the time budget of horses. We are aware that horses are grazing herbivores, but they also eat a substantial amount of browse (up to 50% of the total diet).

As part of this study Mrs Triebe, an honours student from the University of New England, examined 2 novel forages (browse) with the aim to determine the preferred forage and to examine the variability in preference exhibited between individual horses.

Horse preference for Tagasaste (Chamaecytisus palmensis) and Golden Bamboo (Phyllostachys aurea) was tested on each of 3 consecutive days on 12 properties (20 horses – more testing is currently undertaken). The preliminary results indicated an initial preference for Tagasaste on day 1 followed by a greater preference for Bamboo by day 3.

These findings suggest that 1 days of consecutive testing appears to be sufficient time for horses to initiate a postigestive feedback to the novel forages (the horses were not just choosing on smell/taste alone). Future research will further develop this forage preference testing methodology and will test other novel forages (identified through literature review and a horse industry survey).

At first instance horse owners may be a bit wary of using novel forages (browse) as alternatives and to provide enrichment. This could be for several reasons, for example that having shrubs and trees may be a risk to bat material to land on. However this may also be the case with your pastures – when bats fly over and drop their spats, urine or faeces. The good thing about browse is that it can be set up as a cut-and-carry system, you can select the right type of plants and choose where to have them, e.g. avoiding high risk areas. You can wash the browse and provide it under sheltered areas in tube feeders – a good way to provide horses with more fresh forages especially during the non-growing season or drought.

The horse forage survey which is part of this project was advertised in an earlier edition of the Horses and People Magazine and is still running – so if you want to contribute to the direction of this study please visit our survey page: http://surveys.qualdata.net.au/s/horseforage-survey.

The abstract of this paper by Triebe, C., Vao den Berg, M. and Brown, W.Y. 2012: Tagasaste versus bamboo: which do horses prefer? Can be found in the proceedings of the Australasian Equine Science Symposium 4; 41.

The 4th AESS proceedings can be downloaded from the AESS (http://www.australianequinescience.com). There you can also stay tuned for news about the next symposium which is scheduled to take place in 2014.