

Poor pasture management results in Australian horse owners using expensive daily supplementary feeding

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Abstract

This study investigated the feeding and management practices of Australian horse owners. Horse owners were contacted via e-newsletters, Facebook, and email to complete the online survey. Information was collected on demographics, current feeding practices, management practices and pasture condition. Quantitative analytical methods included descriptive statistics, Pearson's chi-square test and a multivariable analysis performed in IBM SPSS. There were 4265 eligible surveys on 5464 horses used in the statistical analysis. Most horses (87%) had daily access to grazing areas, but participants reported that 59% of horses were kept in paddocks that were overgrazed, with a heavy reliance on supplementary feeding. Almost all horses (97%) were fed one or more roughages daily and 80% of horses were fed one or more commercial pellet, premix or grain concentrate daily. While only 20% of participants recorded their horses to be obese, this proportion is likely to be an underestimate, because when pasture intake estimates and reported rations were combined, the results of nutritional analysis showed that 97% of horses were receiving digestible energy above the National Research Council (NRC) (2007) recommendation and it is likely that many animals were overweight. Australian horse owners are underestimating the nutritional content of pastures and overestimating the nutritional requirements of their horses, placing horses at risk of obesity related health problems. Australian horse owners need to recognise that well-managed pastures can provide horses with their daily nutritional requirements and this pathway is a long-term, cost-effective way of feeding horses that also reduces health and behavioural problems.

Key words

Pasture management, overgrazing, equine nutrition, equine management, horses, pasture

Introduction

Horses evolved as free-ranging animals with unrestricted access to grazing on grasslands. These grasslands were often of low nutritional quality and included grasses, legumes, other forbs and various trees and shrubs. As a result, the horse's anatomy, physiology, and natural feeding behaviours are orientated towards maximising grazing efficiency. In Australia, most horses, other than racing Thoroughbreds and Standardbreds, have daily access to pasture, and pasture is an important source of nutrients for these horses. Good quality pastures are able to meet the energy requirements of most horses and in many cases provide nutrients in excess of the horse's requirements (Graham 2006). However, in recent years there has been a trend towards the widespread practice of horse owners feeding prepared mixes, pelleted concentrates, chaff and hay (Stubbs 2001). This has led to pastures being underutilised even though they are a valuable feed source for horses. Good quality pastures provide horses with feed, the ability to perform grazing behaviour and space for exercise. Well managed pastures also offer a financial advantage to horse owners. Pastures are the most economical feed for grazing livestock (Meat & Livestock Australia 2015). On a dry matter basis, pastures are up to four times cheaper than hay and are 8–15 times cheaper than premixes or pellet feeds at current Australian feed prices. However, horse pastures in Australia are often left unmanaged and are frequently overstocked and overgrazed (Stubbs 2001), leading to paddocks becoming degraded exercise areas of little nutritional value. While some pasture factors such as rainfall and climate fall outside of what property owners can alter, there are other factors which horse owners can control such as pasture composition, stocking rate, paddock size and grazing management. Good pasture management leads to pastures becoming a valuable and economical solution for feeding horses in Australia. The aim of this study is to investigate the current feeding and pasture management practices of Australian horse owners and determine how these practices fit with the current scientific literature and recommendations.

Methods

Survey design

An online survey was designed to assess the current feeding and management practices of Australian horse owners. The survey commenced with questions on owner demographics, followed by questions on six categories of horse modelled from the National Research Council (NRC) (2007) computer program that is accessible online (<http://nrc88.nas.edu/nrh/>). Participants were asked to record information on the current

ground cover, pasture height and pasture species in their horses' paddock at the time of the study, as well as a detailed account of what feeds and supplements they fed to their horses, the amount fed in the ration and the reason why participants chose those feeds. The survey mainly consisted of multiple choice and short answer questions. A number of questions were similar to those asked in previous surveys on equine feeding practices (Hoffman et al 2009; Murray et al 2015). The study was approved by the Charles Sturt University Faculty of Science Human Ethics Committee (Protocol number 400/2017/16).

Online survey distribution

A press release on the aim and purpose of the study was written by CSU media and was published on the 27th June 2017 coinciding with the official survey release. The press release was also included as an attachment in all survey recruitment emails, which were sent to 15 Australian equine industry organisations, 16 breed societies, 13 riding associations and 17 trainers, as well as nine equine magazines. The email invited organisations to include the survey in their next e-newsletter, webpage or Facebook pages. The survey link was posted by the authors 98 times on the Facebook pages of Australian equine and horse related groups. The online survey was closed after 10 weeks on the 31st August 2017.

Data Analyses

Survey data were gathered by Survey Monkey™ and downloaded into an Excel spreadsheet. Quantitative data were analysed using descriptive statistics, with the confidence interval set to 95%, and univariate analyses were conducted using Pearson's chi-square test. A multivariable logistic regression model, which tested risk factors for obesity, was performed using the IBM SPSS® software. In addition, participants also had the option of answering open-ended questions. The responses to this were managed using NVivo thematic analysis software, enabling common word frequencies to be identified and categorised into themes. The cost analysis was based on the price of feedstuffs at the time of the study.

Results

A total of 4,512 people responded to the questionnaire, while the total number of horses individually described was 5,646. The majority of horses were in a 'good' body condition score (BCS) (65.0 %, $n=2954/4528$), while 20% ($n=923/4528$) of horses were recorded as 'fat' or 'very fat', while horses in a 'poor' and 'very poor' BCS represented only 1% ($n=43/4528$) of responses. Most horses (80%, $n=4381/5449$) were kept permanently in paddocks with 87% ($n=3768/4331$) of those horses having permanent access to pasture. Most horses (80%, $n=4031/5014$) grazed on pasture with $\geq 75\%$ ground cover. Thirty percent of horses grazed on pastures that contained patches of tall and short grass ($n=1529/5013$), while 29% ($n=1430/5013$) of horses grazed on pastures $< 5\text{cm}$ high. The majority of horses (96%, $n=4100/4277$) shared paddocks with other horses. Overall 90% ($n=4629/5120$) of horses were fed daily in addition to grazing access. Almost all horses (97%, $n=4241/4395$) were fed one or more roughages in their daily ration, while 80% ($n=3516/4395$) were fed one or more commercial premix, pellet, grain, pulse or other concentrate, and 65% ($n=2814/4330$) of horses had one or more supplements included in the daily ration, with vitamins and minerals being the most common supplement (60%, $n=2619/4330$). The available pasture on offer to horses (kg/DM/ha) did not alter the average daily ration weight that horses received. Based on pasture intake at 2.3%/ body weight (BW), and pasture digestibility at 80%, the majority of horses (80%, $n=153/192$) would have received digestible energy above the NRC recommendation from pasture alone. The average yearly cost of supplemental feeding was calculated to be approximately \$2,280 per horse.

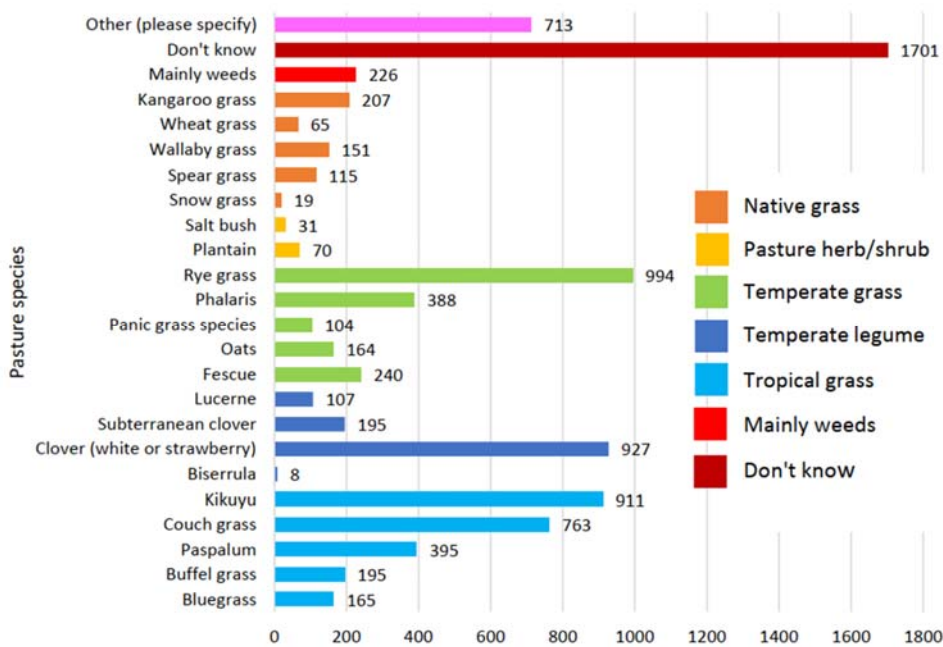


Figure 1. The identified predominant pasture species that 4052 horse owners recorded. Tropical grass species were the most commonly reported (60%), followed by temperate grasses (47%), temperate legumes (30%) and native grasses (14%), while 34 % could not identify the pasture species present.

Discussion

Most Australian horses are kept at pasture and are never stabled, which agrees with previous studies on horse ownership in Australia (McGowan et al 2010; Smyth & Dagley 2015; Stubbs 2001; Thompson et al 2017). Good pasture management needs to be an integral part of horse keeping in Australia. However, the results of this study indicate that the majority of horse owners did not manage their pastures appropriately, which is likely why almost all horses were fed a ration in addition to pasture access. This study found overgrazing is the most common problem occurring in horse pastures. In this study most of horses were kept on short pastures (<5cm high) or pastures which contained long and short patches; a typical sign of what is described as ‘horse sick pasture’. Overgrazing by horses causes erosion, soil compaction, weed infestations, salinity and changes in soil nutrients (van den Berg et al 2015). These are significant environmental problems and symptoms of inadequate or unhealthy pastures. This study also found that changes in pasture availability (kg/DM/ha) caused little change in supplementary feeding practices for horses. Even when pastures would have adequately met the nutritional needs of most horses, a daily ration was still fed. Seasonal fluctuations in body condition score and bodyweight have been matched to seasonal pasture changes, leading to horses gaining excess weight over spring and losing condition over winter (Buckley et al 2018). These results suggest horse owners need to adapt the use of supplementary feeding to reflect the seasonal variations in pasture availability. This tactic would reduce the fluctuations in body weight and condition score with consequent benefits of improved horse health and prevention of obesity related diseases such as laminitis, insulin resistance, equine metabolic disease, difficulty with heat dissipation and increased misbehaviour (Macleay 2018; Buckley et al 2018). In addition, horse owners would find that their supplementary feed costs are reduced. It is a recommendation of this study that horse owners are offered up to date, easily accessible information, education programs and resources on pasture management and equine nutrition from reliable scientific sources.

Conclusion

Good quality pastures in Australia can potentially provide almost all horses with the nutrients that they require. However, horse pastures in Australia are often overgrazed and mismanaged; this poor pasture management has resulted in Australian horse owners using expensive daily supplementary feeding. It appears that horse owners are in need easily accessible information, education programs and resources on pasture management for horses. Creating a more widespread understanding and implementation of sustainable, pasture-based, grazing regimes for horses will have long term benefits in terms of providing more effective

and sustainable land use, as well as improving horse health and providing owners with a cost-effective way of feeding horses.

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