

A disease outbreak investigation into unexplained causes of equine deaths in western Queensland in 2010

Robinson, B.A.¹ and Gummow, B.², ¹Biosecurity Queensland, Australia, ²James Cook University, School of Veterinary & Biomedical Sciences, Australia; barry.robinson@deedi.qld.gov.au

Western Queensland is a predominantly cattle and sheep grazing area where horses are kept for the purpose of work and competition. In the first six months of 2010, a disease outbreak on five properties led to the death of 36 horses from a population of 133. A stepwise disease outbreak investigation was carried out, using a conventional epidemiological approach. A high morbidity, fatality and case fatality rate led investigators to suspect a toxin as the primary determinant. Deaths occurred more-or-less simultaneously on all five properties, which was consistent with a point epidemic, but temporal patterns on each property were sporadic suggesting an accumulating toxin. Although properties were spatially clustered, only two conjoined, and there was no movement of horses between properties, nor was there over-the-fence contact making a direct contact infectious disease cause unlikely. Further spatial patterns indicated an unusual weather pattern in the area of the outbreak in 2009. This coupled to the evidence for an accumulating toxin led to the hypothesis that above average rainfall during the wet season from December 2008 to March 2009 led to an increased biomass of a local variety of *Crotalaria medicaginea*, the dry remnants of which were preferentially grazed during a prolonged dry period at the end of 2009 causing pyrrolizidine alkaloid toxicity and death of horses. The paper covers the outbreak investigation and illustrates the strength of applying a sound epidemiological approach to a complicated outbreak investigation.