THE PREVALENCE OF CONGENITAL LIMB DEFORMITIES IN A POPULATION OF NEW ZEALAND STANDARDBRED FOALS AND THEIR INFLUENCE ON RACING SUCCESS

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE AT MASSEY UNIVERSITY, PALMERSTON NORTH, NEW ZEALAND

NIKITA STOWERS

2013

ABSTRACT

This thesis reports on the retrospective studies carried out on two Standardbred studfarms in New Zealand that aimed to describe and investigate the prevalence of, and risk factors for, congenital limb deformities over the 2004/05 and 2005/06 breeding seasons.

A historical cohort study of 1,189 horses was used for describing the prevalence of limb deformities over two breeding seasons. Limb deformitiy data were routinely collected within one week of birth and foals were only scored once. Foals were described as either having a limb deformity or not. Risk factors investigated were sex, mare age, parity, farm, season, birth month and sire. Simple descriptive statistics were used to describe the prevalence of limb deformities, types of limb deformities and, treatments used. Univariable and multivariable logistic regression was used to investigate the risk factors for limb deformities. Within the multivariable model it was found that birth month, mare age, farm and season were all associated with the prevalence of limb deformities.

A subset of the historical cohort, consisting of all foals born in the 2005/06 season (n=627) was analysed to investigate the association between limb deformities and subsequent racing success. Univariable and multivariable logistic regression and linear regression were used to investigate the association between limb deformities, and racing success. Other variables including birth month, mare age, farm and sex and the association of these with racing success were also investigated. In the final multivariable model, birth month and sex were significantly associated with total starts of the racehorse at the completion of their 3-year-old season and birth month was significantly associated with total stakes.

ACKNOWLEDGEMENTS

I would like to thank all of those who gave me support throughout the time I was completing my Masters. First and foremost I would like to those in the industry that made this research possible, without whom, valuable industry research could neer take place. I would also like to thank my supervisors and colleagues for their support throughout the project and my family and friends for their unconditional support. It is my hope that industry research continues to be completed by those passionate about the racing and equine industries in New Zealand.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

DOD	Developmental orthopaedic disease
=	Equal to
>	Greater than
≥	Greater than or equal to
HRNZ	Harness Racing New Zealand
IQR	Interquartile range
<	Less than
LD	Limb deformity
Ln	Natural logarithm
NZ	New Zealand
95% CI	Ninety five percent confidence interval
OCD	Osteochondritis dissecans
%	Percent
Ref	Reference value
TH-MSD	Thyroid hyperplasia with concurrent musculoskeletal disease