BRIEF COMMUNICATION: Preliminary examination of training and racing milestones in a subset of Standardbred horses

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Keywords: horse; Standardbred; racing.

INTRODUCTION

The Standardbred (harness racing) industry is the second largest equine industry in New Zealand. In 2004 it had a total contribution to the country's gross domestic product of $327 million (IER, 2004). Of the 22 countries that participate in harness racing, New Zealand is ranked tenth based on the number of individual horses to race per season, and on the number of races run per season (Harness Racing New Zealand, Personal communication). However, despite the economic contribution of the Standardbred industry in New Zealand there has been little documentation of the structure and demographics.

To date most studies examining wastage and training in horse racing have focused on the Thoroughbred racing industry (Perkins *et al*., 2004a, Perkins *et al*., 2004b). For harness racing, population demographics have been previously described in the Canadian Standardbred by Physick-Sheard (1986a, 1986b), and Physick-Sheard and Russell (1986). Published studies on the New Zealand harness racing industry have concentrated on training programmes (Shearman & Hopkins, 1996, Shearman & Hopkins, 2000, Shearman *et al*., 2002), and health and training-related problems (Hamlin *et al*., 2002; Hamlin & Hopkins, 2003). A New Zealand Racing Board commissioned report on supply chain wastage has quantified areas of loss from breeding through to racing (McCarthy, 2009). However, we still lack data on the typical pattern of training and racing for the New Zealand Standardbred. The aim of this study was to describe the typical pattern of training, age at attainment of training and racing milestones, and the impact of these milestones on career profile, in a selected subset of Standardbred foals.

MATERIALS AND METHODS

Pedigree and performance data of all 2001-02 born foals to the end of their six-year-old racing season were obtained from the Harness Racing New Zealand (Harness Racing New Zealand, Personal communication) database. Data were examined using frequencies, chi-square, and nominal and binomial logistic regression. Statistical analyses were performed using R for Windows (version 2.7.0 (2008-04-22)) and SPSS (version 16.0 (SPSS Inc, Chicago, Illinois, USA)). The horses were stratified according to racing and training success based on the following criteria: age registered with a trainer, age of first trial, number of trials, age of first race, number of races, number of starts, and career length.

RESULTS

There were 3,401 foals born in the 2001-02 season of which 88 died prior to branding; a further 221 foals were unregistered and removed from the dataset, as were 14 horses imported as breeding stock. Forty-six horses were exported at ≤1yo and therefore did not have a racing career in New Zealand, leaving 3,032 horses (1,521 males and 1,511 females) in this study cohort (Table 1).

A total of 2,072 horses were registered with a trainer. Most horses were first registered as 2-year-olds (n = 1,018), or as 3-year-olds (n = 774). As age increased the number of horses first registered with a trainer decreased (4-year-olds, n = 215; 5-year-olds, n = 49; 6-year-olds, n = 16). Almost one-third of the study cohort (n = 957) were never registered with a trainer.

A total of 1,804 horses trialled. Most horses (47.3%) were first trialled as either 2- (n = 609) or 3-year-olds (n = 825). As age increased the number

TABLE 1: Summary of Standardbred foal crop born in the 2001-02 season and the proportion of horses to achieve training and racing milestones.

Attribute	Number of horses	Proportion
Born	3,401	1.00
Died prior to branding	88	0.026
Not registered	221	0.065
Exports to yearling stage	46	0.015
Imports for breeding	14	0.005
Total eligible within cohort	3,032	0.891
Registered with a trainer	2,072	0.609
Trialled	1,804	0.530
Exported without racing in New Zealand	139	0.046
Raced	1,457	0.481

TABLE 2: Number of horses born in the 2001-02 season that were registered with a trainer, trialled, and raced per age group and the P values relating to males and females. Yo = Year-old.

Age	Number of horses	Male	Female	Chi-square	P-value
Registered with trainer					
2yo	1018	559	459	13.812	< 0.001
3yo	1755	934	821	15.551	< 0.001
4yo	1773	904	869	1.154	0.283
5yo	1439	726	713	0.090	0.764
6yo	925	465	460	0.006	0.939
Trialled					
2yo	609	338	271	8.679	0.003
3yo	1122	597	525	6.6	0.010
4yo	835	436	399	1.938	0.164
5yo	477	264	213	6.078	0.014
6yo	232	137	95	7.936	0.005
Raced					
2yo	272	151	116	6.176	0.013
3yo	875	478	397	9.802	0.002
4yo	1036	574	462	17.289	< 0.001
5yo	738	424	314	20.722	< 0.001
6yo	415	239	176	10.604	0.001
Race overall					
	1448	804	644	31.85	< 0.001

of horses trialling for the first time reduced significantly (4-year-olds, n = 294; 5-year-olds, n = 57; 6-year-olds, n = 19), and 266 horses registered with a trainer never trialled.

A total of 1,457 horses raced. Only 272 horses had their first race as a 2-year-old. Most horses had their first race as 3-year-olds (n = 825), followed by 4-year-olds (n = 390), 5-year-olds (n = 112), and 6-year-olds (n = 30). Within the cohort the number of foals that raced was significantly less than the number that never raced (1,457 vs. 1,575, P = 0.014). The horses that raced ran 27,552 times with a mean of 19 ± 17 (standard deviation) starts, and trialled 7,610 times with a of mean 2 ± 1, up until the end of their 6-year-old season.

There was a significant sex effect (P <0.001) on number of horses registered with a trainer as 2- and 3-year-olds, with fewer females registered than males. However, in older horses, aged 4 to 6 years of age, there was no sex effect (Table 2). Significantly fewer females trialled as 2-, 3-, 5-, and 6-years old, but there was no sex effect for 4-year-olds (P = 0.164). The same sex bias was apparent within all age categories of racing, with fewer females than males (P <0.001) starting in a race. Male horses were 1.51 (95% Confidence interval 1.31-1.74) times more likely to race than female horses. This trend was consistent across all age categories.

There were 139 horses exported as 2-year-olds or older that did not race in New Zealand. Of the horses that raced 523 males and 366 females won at least one race, and 632 males and 455 females were placed (first-to-third) in at least one race by the end of their 6-year-old season.

DISCUSSION

The racing industries generate large volumes of raw data which should be analysed to enhance the knowledge of racing populations, whether it is to identify health, wastage, and performance issues, or to pin-point areas of a racing industry that require attention (Physick-Sheard, 1986b; More, 1999). The New Zealand industry needs to optimise the efficiency of its foal crops, particularly as foal numbers have reduced since 1995, as there must be enough "product" in terms of number of horses racing to gain revenue from betting turnover. As 52% of horses born in the 2001 foal crop did not race this represents a significant amount of wastage, and inefficiencies in optimising betting returns. This figure is particularly poor when compared to the 34% of unraced horses in the Canadian Standardbred population (Physick-Sheard, 1986a). International statistics (Harness Racing New Zealand, Personal communication) show that Canada runs 31,000 races annually and whilst their horse population is larger with 14,000 individual starters, all classes of horses are catered for, particularly those with lesser talent, with the programming of low grade races. New Zealand has recently introduced low stakes meetings to cater for this lower class of horse.

The horses that were never registered with a trainer represented just under a third of the population, but it was not possible to determine if some of these horses were broken-in and tried, or if they were never tried at all. Current Harness Racing New Zealand regulations require trainers to identify all horses in training within their stable. However, there were horses which had been in training and have competed in unofficial workouts that were not officially registered with a trainer. The registration of a horse with a trainer is potentially an important milestone, as it identifies that a horse is receiving training and conditioning.

Significantly fewer fillies than colts and geldings were registered with a trainer as 2- and 3-year-olds, but this difference was not significant for horses aged 4 to 6 years. Female horses were less likely to trial than males at all age groups, with the exception of 4-year-olds. Overall, male horses were

more likely than female horses to have raced and this was also true when stratified by age group. Female horses may be underutilised due to the industry perception that they are not as commercially viable as males, or because of their value as broodmares rather than racehorses.

To optimise the efficiency of New Zealand's racing industry there must be enough horses racing to maximise revenue from betting turnover. Over half the horses in this study cohort never raced, although two-thirds of them were registered with a trainer at some time. The registration of horse with a trainer is potentially an important milestone as it identifies that a horse is receiving training and conditioning. It is clear that fillies are under-represented in the group registered with a trainer as 2- and 3-year-olds, and female horses are less likely to trial and race than their male counterparts.

ACKNOWLEDGEMENTS

The authors would like to thank Wayne Reid, Registrar/Keeper of the Studbook, of Harness Racing New Zealand for providing the data. This project was funded by the Equine Partnership for Excellence.

REFERENCES

Hamlin, M. J.; Hopkins, W.G. 2003: Retrospective trainer-reported incidence and predictors of health and training-related problems in Standardbred racehorses. *Journal of Equine Veterinary Science* **23**: 443-452.

Hamlin, M.J.; Shearman, J.P.; Hopkins, W.G. 2002: Changes in physiological parameters in overtrained Standardbred racehorses. *Equine Veterinary Journal* **34**: 383-388.

IER. 2004: Size and Scope of New Zealand Racing Industry. Economic Impacts and Community Social Benefit. Report to the New Zealand Racing Board. [http://static.tab.co.nz/control/data/nzrb-other-reports/NZRB-Industry-Size-Scope_Study-June-2004]

McCarthy, G. 2009: Analysis of supply chain wastage in the thoroughbred and harness racing codes. *The Foundation Bulletin. Volume 14, Number 4*. New Zealand Equine Research Foundation, Palmerston North, New Zealand. 3 pp. www.harnessracing.co.nz/docs/Bulletin.pdf

More, S.J. 1999: A longitudinal study of racing Thoroughbreds: performance during first years of racing. *Australian Veterinary Journal* **77**: 105-112.

Perkins, N.R., Reid, S.W.J.; Morris, R.S. 2004a: Profiling the New Zealand Thoroughbred racing industry. 1. Training, racing and general health patterns. *New Zealand Veterinary Journal* **53**: 59-68.

Perkins, N.R., Reid, S.W.J.; Morris, R.S. 2004b: Profiling the New Zealand Thoroughbred racing industry. 2. Conditions interfering with training and racing. *New Zealand Veterinary Journal* **53**: 69-76.

Physick-Sheard, P.W. 1986a: Career profile of the Canadian Standardbred I. Influence of age, gait and sex upon chances of racing. *Canadian Journal of Veterinary Research* **50**: 449-456.

Physick-Sheard, P.W. 1986b: Career profile of the Canadian Standardbred II. Influence of age, gait and sex upon number of races, money won and race times. *Canadian Journal of Veterinary Research* **50**: 457-470.

Physick-Sheard, P.W.; Russell, M. 1986: Career profile of the Canadian Standardbred III. Influence of temporary absence from racing and season. *Canadian Journal of Veterinary Research* **50**: 471-478.

Shearman, J.P., Hamlin, M.J.; Hopkins, W.G. 2002: Effect of tapered normal and interval training on performance of Standardbred pacers. *Equine Veterinary Journal* **34**: 395-399.

Shearman, J.P.; Hopkins, W.G. 1996: Training of standardbred maiden pacers. *Journal of Equine Veterinary Science* **16**: 116-119.

Shearman, J.P.; Hopkins, W.G. 2000: Reliability of two 2,400-m time-trial protocols for assessing performance of Standardbred racehorses. *American Journal of Veterinary Research* **61**: 1339-1342.