

2003/2004 Annual Chairman's Report

INTRODUCTION:

Against a background of rapid change in the NZ horse industry, the New Zealand Equine Research Foundation continued to work to foster and promote equine research and education in New Zealand. The numerous activities mentioned in last year's annual report have continued and others have commenced. Our main endeavours have been in supporting and encouraging a wide range of research projects the results of which, we believe, will strengthen our industry. Research per se is of little value unless the new knowledge gained is effectively transferred to those who are working on a day-to-day basis with our horses. For this reason, the Foundation has continued to bring the results of sponsored research, and research from around the globe, to these horsemen and women in a variety of ways. These, and the other actions of the Foundation during the 2003 – 2004 financial year, are briefly described below under the three major headings, research, education and administration.

RESEARCH:

As has been the custom over the last few years, the Foundation has supported two types of research projects. The first is research commissioned by the Foundation to supply knowledge which we consider is essential for the successful development of the industry. The second is research applied for by researchers who have expertise in a particular field. Applications for this research are called for each year and only those projects, which pass strict criteria including, importance to the industry, cost effectiveness, practical value, scientific merit, experience, and "tract record" of the researchers qualify for support. Because our limited funds cannot usually finance all the good projects from the applicants, support for them is decided on a competitive basis. The research projects which we have promoted during the year are outlined below.

Commissioned Research

(1) Health and performance Profile of NZ Thoroughbreds in Training

Approximately 20% of all thoroughbreds in training in NZ (i.e.1700 horses) were involved in a project to identify the major problems in NZ racing thoroughbreds, assess their effects on subsequent performance, and to establish the cost of these problems to the NZ thoroughbred racing industry. The project was completed during the year by Dr. Nigel Perkins and Professor Roger Morris at the Epicentre in Massey University. Dr. Perkins has undertaken to have all the results of this research available in booklet form within the next six months. It is the intention of the Foundation to distribute this booklet widely throughout the industry.

(2) Prevalence of Gastric Ulceration in NZ

Gastric ulcers are known to be very common in competitive horses in overseas countries but their incidence in NZ is unknown. This project sets out to identify how common the problem is under NZ management conditions and to identify circumstances that may be contributing to it in our environment. This ongoing research programme is being directed by Dr. Janene Kingston at the Institute of Veterinary, Animal, and Biomedical Sciences at Massey University. A Masterate student, Robin Bell, has been employed to undertake this study. The research required the importation of diagnostic equipment hitherto unavailable in the country. When the project is completed this equipment will become available to be used for the benefit of horses throughout New Zealand.

(3) An Economic Study of the NZ Horse Industry

This study, which aims to determine the NZ Horse Industry's contribution to the NZ economy, commenced during the year. It entails the obtaining of appropriate data from all sections of the NZ Equine Industry and to quantify the contribution each sector makes. Initially a Masterate student was employed to undertake this study under the guidance of Professor Rukmani Gounder of the Department of International and Applied Economics at Massey University. Unfortunately, during the period of collection of the data, the student was offered a job he couldn't refuse. As a consequence, Professor Gounder is now personally involved in data collection and analysis. Because of this unseen problem, the cost of this project has escalated and its completion date is in jeopardy. The Foundation, however, believes that the results of this research are fundamental to the countries economic knowledge and important to ensure those in political positions have an accurate assessment of how important horses are to the NZ's economic well-being.

(4) "Seasonality of Helminth Infections in Horses at Pasture Under NZ Conditions".

A high incidence of resistance to the major varieties of worm drenches is known to occur in goats, sheep and cattle in NZ and it is the belief of most parasitologists that, in the near future, resistance to these worm drenches will occur in horses. In fact, resistance to one of the major types of drenches, the benzimidazoles, is probably already widespread in the small strongyles (known as cyathostomes) population of NZ horses. This has lead to the almost ubiquitous use, in this country, of a different type of worm drench, macrocyclic lactones. On many of our properties there is tremendous selection pressure for resistance to these drugs as they are commonly administered to many, if not all, horses on large horse properties every six weeks or less. Thus the sustainability of current worm drench use must be questioned and consideration given to what can be done about this time-bomb-like circumstance. The ability of veterinarians to give sound advice about worm drenching is severely compromised by their poor understanding of the biology of horse parasites under NZ condition. So this study sets out to provide some of the fundamental knowledge required. It is to be undertaken by Professor Bill Pomroy and Dr. Ian Scott of the Institute of Veterinary, Animal and Biomedical Sciences at Massey University. During the year the Foundation has been seeking sources of funds to help finance this much needed research. The actual project will not start until the summer of 2004- 2005 but much of the preparatory work has been completed during this year.

Newly Supported Competitive Research Projects

Six new research projects were supported during 2003- 2004. These projects were:

1. A Study to Develop a Global Positioning Satellite Device suitable to Measure the Amount and Type of exercise naturally accomplished by Foals under NZ Management Conditions.

\$9,000

Dr Chris Rogers, Massey University

A previous study supported by the NZ Equine Research Foundation showed that medium to high intensity exercise superimposed on the normal activity of foals at pasture increases their musculoskeletal development. What we now need to know is (a) how much of this type of exercise foals are achieving at pasture and (b) precisely how much more is needed for maximum development. This project sets out to develop a system for the accurate measurement of foal activity by using Global Positioning Satellite technology and confirm its accuracy. A further aim is to accurately measure the amount and type of exercise foals perform under different New Zealand management systems. These are the initial steps to eventually work out how much extra exercise is required for maximum musculoskeletal development of our foals.

2. Investigating a Novel, Non-invasive Alternative to Blood Sampling

\$9,900

Dr Chris Rogers, Massey University

Taking samples of body fluids, such as blood, for analysis has traditionally involved the use of needles injected into a horse's blood vessels. When this is done repeatedly some resistance from the horses is understandably, often encountered. A new method of sampling body fluids from horses has been devised by a New Zealand scientist. This method does not require the use of needles. Rather it utilizes a combination of ultrasound and a small electric current applied to the skin to draw fluids from the body through the skin to a collecting vessel. The technique has already been used successfully in humans and a pilot trial has also been successfully undertaken in horses. The NZ Equine Research Foundation has supported Dr Chris Rogers of Massey University to investigate the usefulness of this technique in horses. The non-invasive nature of this collection method minimizes any stress associated with the injection of a needle. The technique should be ideal for determining the levels of some chemicals in body fluids. If this is the case, injecting needles into horse's veins to collect samples for chemical analysis may become much less common in the future.

3. A Study on the Effects of the Use of Human Chorionic Gonadotrophin (hCG) in Mares

\$18,485

Dr. Margaret Evans, Christchurch Hospital.

When the hormone human chorionic gonadotrophin (CG) is used in mares during heat ovulation occurs at a predictable time after its injection without any known detrimental affect on fertility. Thus this hormone is very widely used on studs. However, there is a potential problem with repeated use of hCG as antibodies against it may be generated and these could eventually affect its action. This study aims to investigate whether antibodies are generated and whether repeated hCG administration to mares affects their reproductive hormones. The study is a collaborative one with a world-renowned equine reproductive expert in Brazil. Data from 125 cycles which includes 2500 ultrasonic examinations and 2500 blood samples has already been collected and the NZ Equine Research Foundation funding is to provide the opportunity to perform laboratory analysis on the blood samples.

4. A Study to Determine if Muscle Stimulation Increases Muscle, Bone and Tendon Strength in Horses

\$21,660

Dr Elwyn Firth, Massey University

Musculoskeletal development of the limbs of horses is determined partly by genetic factors and partly by the forces placed on them during growth. The purpose of this study is to determine if muscle stimulation alters muscle, bone and tendon strength in foals. If it does then muscle stimulation may result in stronger bones, muscles and tendons in competitive horses and allow these horses to better withstand the strains of competition and compete for longer periods thus reducing the costs to owners.

5. An Investigation into the Intensity of Exercise and the Horse's Response to Training

\$23,000

Dr Janene Kingston, Massey University

There is very little accurate information available on exactly how much exercise Thoroughbreds do on a day-to-day basis while in training. Most trainers have an exercise programme for their horses that increases in distance and speed from the time horses enter the stable until they race. The amount of work for each horse is reliant on the judgment of the trainer and rider. Jockeys of horses in training are frequently asked to make a horse go "half pace" or "three-quarter pace" and "once around" or "twice around". Exactly how much work these horses are doing can now be accurately measured using modern technology. Dr Janene Kingston, an equine exercise physiologist at Massey University, is examining 20 young thoroughbreds in training using a Global Positioning System Device attached to the gear of a horse to record their speed and distance traveled. She is also using a heart rate monitor to assess the workload and blood lactate monitoring to assess how their fitness changes with exercise. As a result of this study we will know, not only what the horses are actually doing, but also be able to assess how their fitness changes in response to training and racing. The study will also provide valuable information on a horse's readiness for racing and provide some guidelines for the future training of our thoroughbreds.

6. Evaluation of an Injection Anaesthetic Technique for use in Horses

\$13,600

Dr Vicki Walsh, Massey University

Horses have a higher mortality rate when anaesthetized (1%) than most other species. This is related to their size, unique cardiovascular system, and their propensity to struggle during anaesthetic recovery. Two different methods are used to anaesthetise horses. In one, the anaesthetic drugs are administered by inhalation and, in the other, they are given by injection. For longer anaesthetic procedures the inhalation method is most commonly used. However, this technique results in depression of the heart and circulatory system and may be associated with a higher mortality rate than the injection technique. In the injection technique several drugs may be given in combination and, whilst this technique results in less depression of the heart and circulation, it can prolong the horses' anaesthetic recovery time. The problem we have at present is that there is little known about the effects of the injection anaesthetic drugs for prolonged (more than one hour) anaesthesia in horses. This research project aims to supply the horse industry with better recommendations about the use of injection anaesthetic drugs in prolonged anaesthetic procedures and assess a technique that may have a lower mortality rate than presently experienced.

Ongoing Research Projects

During the year, final reports were received from 4 projects which had been originally supported in previous years. These are:

1: STUDY OF SUPERFICIAL DIGITAL FLEXOR TENDON PROPERTIES IN THE HORSE [PROJECT 8/96]

(Final report) Elwyn Firth

2: A CLINICAL INVESTIGATION OF INJURIES OF THE PROXIMAL PALMAR METACARPUS IN RACING THOROUGHBREDS [PROJECT 9/96]

(Final report) Brian H Anderson (now in Australia)

3: GENTAMICIN THERAPEUTIC DRUG MONITORING IN HORSES [PROJECT 3/98]

Withdrawn (funds returned) Tony Mogg

3A: DEVELOPING A SIMPLE NON-INVASIVE METHOD FOR ASSESSING STRESS IN HORSES [PROJECT 5/00]

(Final report) Cliff Irvine

4: THE EFFECT OF EARLY EXERCISE ON THE ARTICULAR CARTILAGE AND SUBCHONDRAL BONE OF THE DISTAL THIRD METACARPAL/METATARSAL BONES OF THOROUGHBRED HORSES [PROJECT 3/02 following on from 2/00]

(Final report) (plus masterate thesis presented to NZERF) Susanne Dykgraaf

Progress reports were received from six unfinished research projects. These were:

1: THE MEASUREMENT OF INSULIN-LIKE GROWTH FACTOR-1 IN HORSES OF DIFFERENT AGES [PROJECT 4/02]

(Progress report) Margaret Evans

2: THE EFFECT OF EARLY RACE TRAINING ON THE KINEMATICS OF 2-YEAR OLD THOROUGHBRED HORSES [PROJECT 5/02]

(Progress report) Chris Rogers

3: THE RELATIONSHIP OF FAECAL pH TO HIGH GRAIN/LOW FIBRE DIETS IN NEW ZEALAND RACING STABLES [PROJECT 6/02] (Progress report) Chris Rogers

4: PRELIMINARY INVESTIGATION OF A NOVEL NON-INVASIVE ALTERNATIVE TO BLOOD SAMPLING IN EQUINE ATHLETES [PROJECT 4/03]

(Progress report) Chris Rogers

5: A PILOT STUDY FOR THE DEVELOPMENT OF A GPS DEVICE SUITABLE FOR THE MEASUREMENT OF PASTURE ACTIVITY OF FOALS [PROJECT 5/03]

(Progress report) Chris Rogers

6: A STUDY ON THE EFFECTS OF THE USE OF HUMAN CHORIONIC GONADOTROPHIN (hCG) IN MARES [PROJECT 9/03]

(Progress report) Margaret Evans

EDUCATION:

The Foundation continued its involvement in its many educational activities detailed in previous Annual Reports. These activities are briefly described below.

1. Seminars

For nearly 15 years the Foundation has been organizing an annual series of lectures, in several locations throughout NZ. The purpose of these lectures is to provide an opportunity to distribute the latest knowledge from Foundation supported research, and research from around the world, to NZ horsemen and women. The 2003 series was held in Auckland, Palmerston North and Balchutha and once more was extremely well received by participants. The main speaker was Professor Jeffcott of Cambridge University. Professor Jeffcott proved to be a popular and approachable speaker and his outstanding presentations were packed with relevant and valuable new knowledge on developmental bone disease, the effects of two-year-old racing and back problems of horses. Complimentary speakers were: Dr. Janene Kingston of Massey University who gave an excellent

presentation on assessing fitness of horses and how to investigate the causes of poor performance, and Dr. Nigel Perkins who's high class presentation provided an update on the NZ Equine Research Foundation sponsored study into the causes of wastage in NZ racing thoroughbreds. As has been the case for over a decade, these lectures were generously sponsored by Bomac Laboratories Ltd. And the Foundation is sincerely thankful for their continuing support.

2. Bulletins

The NZ Equine Research Foundation's Bulletins were again published in the spring and autumn. These Bulletins are distributed to approximately 15,000 people in the NZ horse industry. Their purpose is to bring to the attention of NZ horsemen and women the results of Foundation funded research and research from overseas sources. They also contain information of the Foundation's various activities and what other countries are doing to improve their horse industries. These Bulletins have been a very important medium for the distribution of research-based knowledge within New Zealand. They are distributed to members of the following organizations or readers of their publications: NZ Thoroughbred Breeders Association, NZ Thoroughbred Racing, Harness Racing NZ, NZ Standardbred Breeders Association, NZ Equine Veterinary Association, NZ Farriers Association, Taranaki Miniature Horses, The Morgan Horse Association of NZ and the NZ Hanoverian Association. Since the creation of these Bulletins over a decade ago, Bomac Laboratories Ltd. has been generously sponsoring them and the Foundation is sincerely appreciative of their support.

3. Books

Although no books were published during this year, members of our publication subcommittee were working on several in preparation for publication. One of these books, on the most important, severe, bacterial disease of horses, Strangles, has been published in May 2004. Four other books are in preparation and 11 have already been published over the years. These books provide essential knowledge for those responsible for the care of horses. Much of the costs of production of these books are provided by companies wishing to support equine education.

4. Fellowships and Scholarships

Due to the generous support of the Pye Foundation, our Foundation has been able to finance several fellowships and scholarships in 2003-2004.

These are: -

Pye Foundation Fellowship

This was awarded to the investigators of the important helminth infection project mentioned earlier in this report.

Bluegrass Laminitis Symposium Scholarships

Annual scholarships for a veterinarian and a farrier to attend the prestigious Bluegrass Laminitis Symposium and to spend some time with colleagues in the USA are provided by the Foundation in collaboration with the Pye Foundation. The purposes of these scholarships are:

To improve the knowledge and skill of New Zealanders in care and treatment of the horses' foot

To encourage veterinarians and farriers to work together as a team to overcome problems of the horses' foot.

The scholarships are advertised widely to farriers and veterinarians and are applied for on a competitive basis. Successful recipients are required on return to NZ to share their new knowledge with the rest of the horse industry through written reports which are published in various horse

magazines and by giving lectures at meetings and conferences throughout the country. The successful recipients in 2003- 2004 were Dr. Warren Mitchell, veterinarian of Rotorua, and Andrew Fisher, farrier of Cambridge.

Undergraduate Scholarships

Two scholarships are provided annually to bright, young, potential veterinarians who have a background in horses. They are competed for on a competitive basis and are given to students in the final year of the BVSc course at Massey University. The aim of the scholarships is to help top undergraduates to pursue a horse-orientated career and thus provide, in future, top veterinarians with a passion for the industry. The successful candidates in 2003-2004 were Virginia Brosnan of Papakura and Emma Bishop of Putaruru.

5. Travel Awards

Travel Awards by the NZ Equine Research Foundation are widely advertised throughout the scientific sector of the NZ horse industry each year. The purposes of these awards are:

To present information resulting from NZ Equine Research Foundation sponsored research studies in influential overseas forums

To encourage and maximize the number of people capable, willing and interested in research and development in the NZ horse industry

To support the training of promising young NZ scientists and veterinarians interested in equine research

To build up within NZ a group of experts with international contacts and experience

To bring overseas experts to NZ to contribute to our knowledge, skills, training, and experience.

The successful applicants who applied during 2003-2004 financial year and a brief outline of their travel are as follows:

1. Susanne Dykgraaf, a veterinarian who recently completed a Masterate degree with support from the NZ Equine Research Foundation, to deliver the findings of her research at the esteemed "2004 Focus on Joints Meeting" in Louisville, Kentucky.

2. Dr. Margaret Evans, scientist of Christchurch, to attend an International Congress on Animal Reproduction in Brazil and present the findings of her research which was funded by the Foundation. Margaret also will attend the committee meeting of the International Symposium on Equine Reproduction.

3. Dr. Ian Anderson, of the Equine Parentage and Animal Genetics Services Centre at Massey University, to attend the World Equine Veterinary Association Conference in Buenos Aires with the object of arranging a future World Equine Veterinary Association Conference in New Zealand and to identify potential speakers for future NZ Equine Research Foundation seminars. As a result of Dr. Anderson's visit to this conference there is a very good chance that NZ will host one of these conferences in the near future. If this happens, some 600 or more equine veterinarians from throughout the world will visit our shores.

6. Speakers Roster

One of the methods used by the Foundation to disseminate research-based knowledge to the various sectors of the horse industry is by encouraging industry organizations to use professional equine researchers to speak at their meetings. About 7 years ago the Foundation established a list of researchers who would be willing and available to speak at such meetings. The list of speakers and topics are distributed to appropriate organization within the industry. The speakers have proved popular and several industry bodies have taken the opportunity to use them during the year.

7. Website

The NZERF website (nzerf.co.nz) has been maintained over previous years by Dr. Nigel Perkins a committee member of our Foundation. Unfortunately, during the year, Dr. Perkins took up a professional position in Australia and could not continue with this task. As a consequence, developments intended for the website this year have been put on hold. Recently, however we have appointed Dr. Chris Rogers to organize the site and it is the intention of the Foundation to continue to develop this method of communication to the industry.

ADMINISTRATION:

During the year two enthusiastic professional people working for the Foundation resigned. Dr. Nigel Perkins, as mentioned above, is going overseas and Dr. Pat Cooper is retiring as the NZ Equine Veterinary Association's representative on our technical Subcommittee. Both of these people have been very keen and productive supporters of our activities. We gratefully acknowledge the important contributions they have made over the years and wish them all the best for the future.

Work by Professor Fielden on an historical review of the research and educational activities of the Foundation since its inception has been ongoing during the year. The Foundation is indebted to Professor Fielden for his continuing interest and energy in undertaking this massive task.

Support for an appropriate clinical, teaching and research facility in the Waikato was given during the year by the Foundation to the organizers of this proposed enterprise. It is the Foundation's belief that the establishment of a world-class facility in our major horse region would greatly benefit our industry. It would result in better teaching of equine interested students; more experience for their teachers; and better opportunities for equine researchers. Over the past decade or more there has been a wholesale exodus of young equine researchers from our shores. To overcome this problem we must offer better opportunities within the country, more stimulating working conditions, and more appropriate emoluments. If we don't look after these researchers our industry will suffer significantly and will be unable to prosper, as it should.

Following the 2003 Asian Racing Federation conference in Auckland, a decision was made to review the current knowledge of the condition of post-exercise nasal bleeding in thoroughbreds and how best to manage it from a regulatory point of view. This task was given to the NZ delegates at the conference who sort the assistance of the NZ Equine Research Foundation. The Foundation set up a committee of four experts (Drs. Janene Kingston, Brian Goulden, Nigel Perkins and Jonathon Hope) for the purposes of collecting and collating the required information. This committee reviewed the present knowledge in the scientific literature, reviewed current regulations in racing administration around the world, and sort the opinion of a number (12) of world experts on this problem. It is intended to present the report to the Asian Racing Federation during the current year.

ACKNOWLEDGEMENTS:

The Foundation has continued to receive financial underwriting from industry bodies such as the NZ Racing Board, NZ Thoroughbred Racing, Harness Racing NZ, NZ Thoroughbred Breeders

Association, NZ Standardbred Breeders Association and the NZ Equestrian Federation. As in previous years it has also received generous and continuing support from Wendy and Don Pye of the Pye Foundation and Bomac Laboratories Ltd. It is greatly encouraged by this assistance and gratefully appreciates their inspirational patronage. It has again been a pleasure to work with such a dedicated, talented and passionate Board. The highly qualified people it contains have made their experience and abilities available in a charitable fashion for the betterment of our horses. The Foundation and the industry are greatly indebted to these people and I warmly thank them for their wholehearted commitment. The superlative abilities of these people inspire confidence that the NZ Equine Research Foundation will continue its important role in developing an exciting, prosperous and dynamic NZ Horse Industry.

Brian Goulden
Chairman