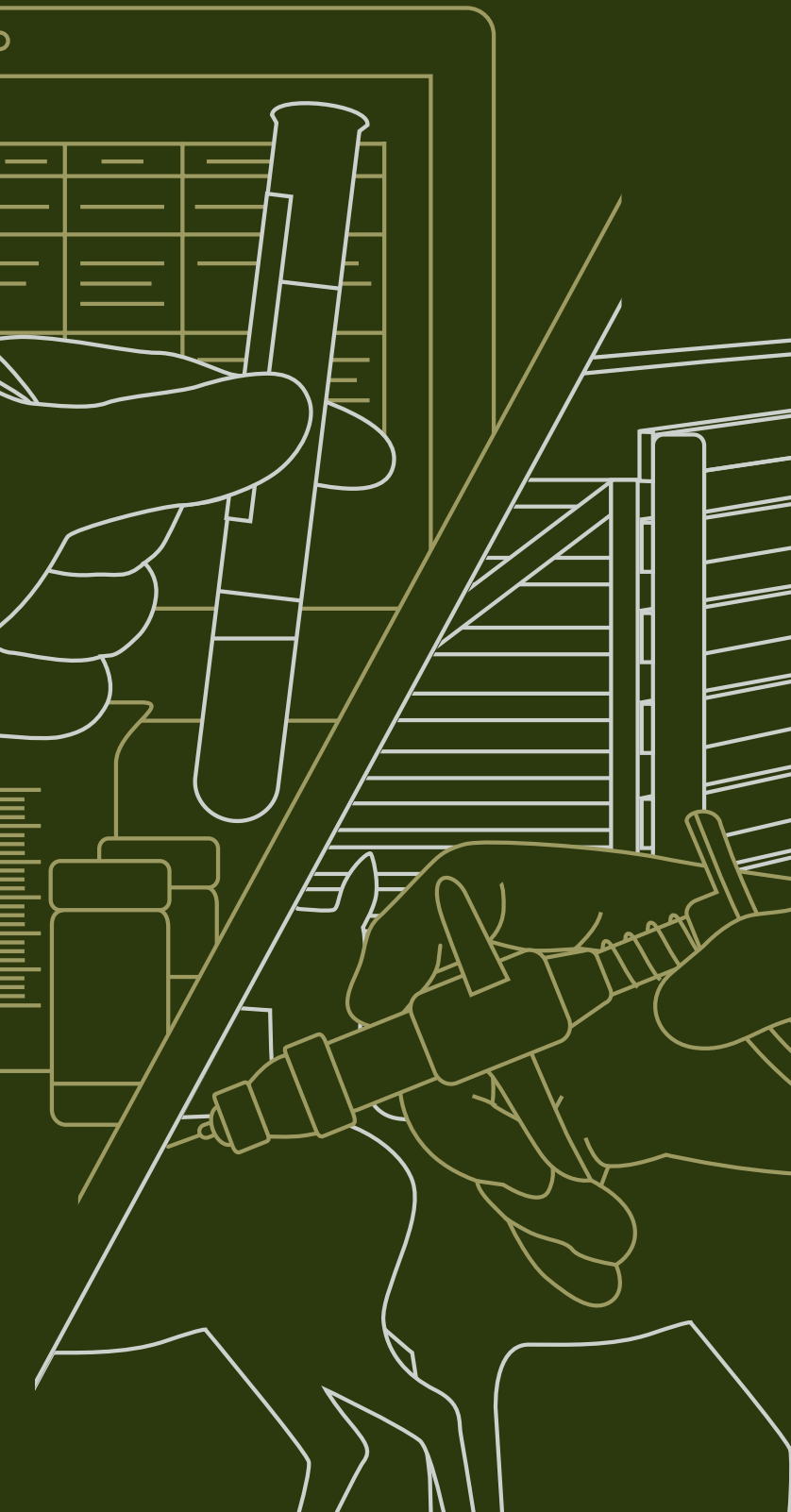




SCIENCE STRATEGY 2015-2020

Considerations to guide
DEERResearch in its
industry-good investments



CONTENTS

OWNERSHIP, VERSION CONTROL AND DURATION	2
BACKGROUND AND PURPOSE	2
SUPPORTING INFORMATION	2
Amount of Investment	3
RESEARCH OBJECTIVES	3
SCIENCE STRATEGY	4
High level	4
Impacts sought	4
Science horizon	4
Research providers	4
Role of research objectives	4
In detail FY18 – FY 21	4
Commentary	6
ANNEX: DINZ STRATEGY SUMMARY	7

OWNERSHIP, VERSION CONTROL AND DURATION

This document has been prepared and adopted by the Board of DEEResearch Ltd. It is intended to be reviewed annually by the Board.

First application date		
Current version	1.1	18 October 2017
Previous versions	1.0	27 August 2015

BACKGROUND AND PURPOSE

In the agreement establishing DEEResearch, DEEResearch’s shareholders specified the types of research in which DEEResearch may invest. That specification is very broad, so much so that it enables almost any investigation involving deer or deer products (but not velvet) to be commissioned. Based on that agreement, the DEEResearch Board has agreed a ‘Statement of Purpose’ for DEEResearch, as follows.

Co-ordinate and invest in research and innovation to enable a more profitable and sustainable New Zealand deer industry

DEEResearch therefore has a statement setting out its role in the deer industry and its purpose, along with a list of things it may invest in. This Science Strategy is to guide DEEResearch’s investment decisions, by specifying current research objectives directed towards its purpose and indicating their relative importance in investment terms. It is intended that this document be applied by the Board as a signal rather than a directive. It will be applied by the Board when setting its research programme annually, after engagement with interest parties on research opportunities and needs and projects that are proposed to meet them.

SUPPORTING INFORMATION

DEEResearch’s specification of and prioritisation between research objectives has been heavily influenced by the Deer Industry New Zealand Strategy. The relevant strategic objectives from the Deer Industry New Zealand (‘DINZ’) strategy (contained in full in the Annex) are shown in Table 1.

Table 1 Excerpt from DINZ Strategy relevant to DEEResearch

Strategic objectives	Premium positioning of New Zealand Deer Products	Sustainable on-farm value creation
Subsidiary goals	Maintain systems that provide robust assurance of the integrity and quality of New Zealand deer products	Create an environment in which deer farmers continuously improve their farm operations to increase efficiency of production
	Communicate the quality and integrity and benefits of New Zealand deer products to customers and consumers	Ensure deer farmers can succeed while operating in an environmental and ethically sustainable way.

Amount of investment

In the 5 years to the end of June 2018 (FY18), the DEEResearch budget has ranged between \$1,826,000 and \$2,010,000. Its budget for FY18 comprises strategic (long-term) investments only, although the Hitting Targets project itself comprises a mix of strategic and tactical sub-projects. The size and duration of these funding investments, and their funders, are summarised in Table 1.

Table 2: DEEResearch budget FY18

Project	Funding (\$K)				Project Duration
	DINZ	AgResearch	Landcorp	Total	
Hitting Targets	408	1,333	50	1,791	FY14-22
Methane Mitigation	35*	0	0	35	FY13-19
Total	443	1,333	50	1,826	

*contribution to a pan-pastoral sector project

RESEARCH OBJECTIVES

DEEResearch's research objectives are industry objectives that research can support or contribute towards. They concern the following themes and are explained in table 1:

Growing deer
Caring for deer
Caring for the environment
Caring for customers

Table 3

Research theme	Research objective	Scope of research
<i>Growing deer</i>	Profitable deer farming systems optimise genetics, nutrition and reproduction to produce products desired by our consumers	Knowledge and tools to- <ul style="list-style-type: none"> promote the selection of deer that meet the industry's strategic breeding objectives promote deer feeding practices that optimise farm budgets, deer physiology, consumer preferences on animal diet, and integration with the nutritional demands of other stock classes in the farm system; and lift the reproductive efficiency of deer.
<i>Caring for deer</i>	Profitable deer farming systems protect deer from pests and diseases and maintain the 'five freedoms' of animal welfare	Knowledge and tools to create- <ul style="list-style-type: none"> low input deer health systems ensuring society's changing expectations on animal welfare are met by the evolving components of deer production systems.

Research theme	Research objective	Scope of research
<i>Caring for the environment</i>	Profitable deer systems maintain farmland biodiversity and the quality of soil, water and atmosphere	<p>Knowledge and tools that enable-</p> <ul style="list-style-type: none"> • deer to be profitably bred, grown, slaughtered and transported; or • deer products to be processed, packaged and transported, in ways that maintain New Zealand’s natural capital.
<i>Caring for customers</i>	Venison and other co-products (except velvet antler) are produced efficiently and consistently to our consumers’ expectations	<p>Knowledge and tools that-</p> <ul style="list-style-type: none"> • improve the profitability of processing systems; or • enhance the value of venison and non-velvet co-products

The role of these objectives is described in the Science Strategy.

SCIENCE STRATEGY

High level

Impacts sought

Research investment decisions will be focussed on projects with the capacity to create on-going industry impacts through sustained practice change across the majority of NZ venison producers or processors as the case may be. These impacts include improved profitability (through both increased product quality and quantity) as well as maintenance of freedom to operate and market access. DEEResearch intends to evaluate the success of its investments, and by extension, this Strategy, by setting impact measures for each project and encouraging its shareholders to monitor their attainment at relevant timepoints.

Science horizon

DEEResearch investments may be strategic or tactical in nature. Strategic investments are those whose objectives are broad in scope, tend not to create an immediate output capable of end-user adoption and whose outputs can potentially be applied in a variety of ways. Tactical investments have a narrow focus, seek to address a contemporary industry need and would usually result in knowledge capable of end-user adoption.

Role of research objectives

The vast majority of research funds will be invested into deer-specific research. All research in which DEEResearch invests must be designed to meet, or, in the case of pan-pastoral research, be capable of meeting at least one of its research objectives.

Research providers

DEEResearch will continue to invest most funding through the Hitting Targets project undertaken by AgResearch. Use of one main research provider makes efficient use of limited deer industry funds by streamlining project management, enabling performance of multiple studies on one pool of animals, and accessing a full range of pastoral science disciplines and techniques through one port of entry. It also encourages retention and investment into deer research capability by that provider. The rationale for the selection of and the quantum of investment into each sub-project of Hitting Targets will be described in the annual Hitting Targets plan approved each year by the DEEResearch board.

In detail FY18 – FY 21

The recommended investment profile in each DEEResearch research objective for the next 3 years is summarised in Figure 1. The focus that DEEResearch intends to place on each of its research objectives in the next 3 years is explained in Table 4 and commentary on the extent to which DEEResearch’s direction is shifting from its previous course follows thereafter. As the focus of tactical research is difficult to predict, tactical research commissioned outside of Hitting Targets has not been included in DEEResearch’s overall investment profile.

Figure 1: Total investment profile in research themes FY15 to FY21

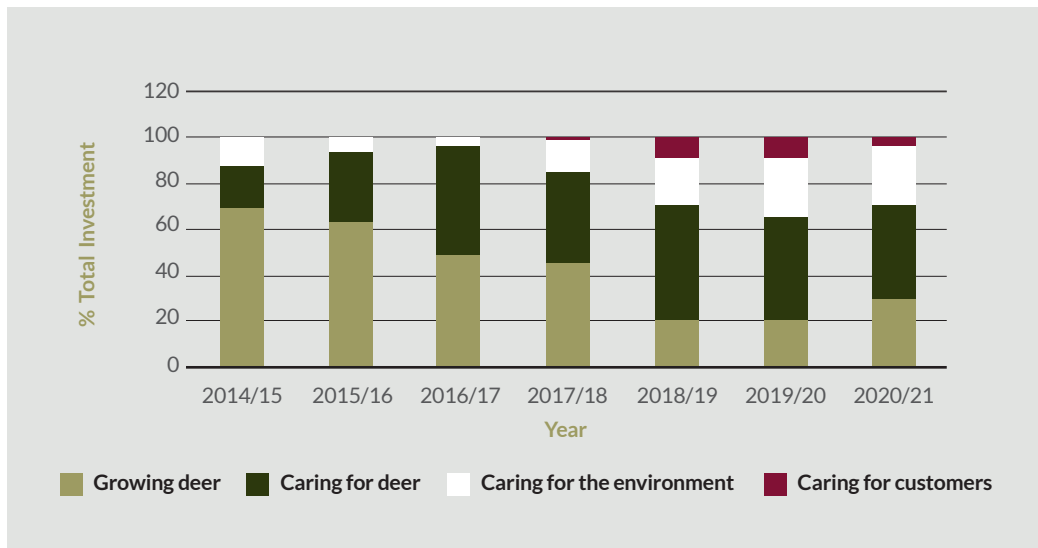


Table 4: Strategic reasons for investment in each research theme

Research theme	Rationale for intended quantum of invest
1. Growing deer	<p>Ongoing investment required to ensure deer breeding values and selection indices (under Deer Select) evolve to meet market expectations on the seasonality of production and carcass configuration. Investment will decline from previous levels in the current year then start to increase from 2020 as genomic-based outputs from research under Caring for deer are converted into tools to breed or grow deer.</p> <p>A small amount of investment is required to fill in some gaps and fine tune previous research on deer nutrition, to ensure that deer reach their genetic potential and/or optimise their profitability in integrated livestock systems as those systems continue to evolve.</p>
2. Caring for deer	<p>There is a major opportunity to use genomics to investigate and implement the capacity to breed deer generally resilient to pests and diseases or specifically resilient to particular pests such as for instance parasites. This research is expensive and risky (the concept of genetically-inherited general resilience is not yet proven) but the reward is potentially significant since genomic tools can be applied to selection decisions quicker than existing genetics tools, the cost of implementation is decreasing and tools are easier to use than genetics-based selection tools. Therefore, the widespread use of genomics can enable swift transformation of the national herd. Investment will decrease by FY21 as the focus shifts away from fundamental research to applying its outputs through the implementation pathway (Deer Select) for breeding deer.</p> <p>There are currently no strategic animal welfare issues. An emerging issue could be met by a tactical investment.</p>
3. Caring for the environment	<p>Regulations setting environmental limits represent a current and significant freedom-to-operate threat to deer farming. The deer industry can best meet this challenge by understanding the nexus between on-farm system components and adverse environmental effects, and understanding the most efficient ways of reducing those effects, whether through using remedial measures or adjusting deer system (e.g. grazing) practices. Being able to reduce deer emissions of greenhouse gases help maintain the industry's current social licence to operate.</p>

Research theme	Rationale for intended quantum of investment
4. <i>Caring for customers</i>	<p>A considerable body of work has already been undertaken on safe and efficient deer processing systems. Much current food safety research on processing practices in the red meat industry are directly applicable and accessible to the deer industry. Similarly, there is no current demand from exporters to investigate methods to improve or maintain the quality of product as it leaves the processing plant (e.g. novel types of packaging), nor is there current demand to learn more about the intrinsic quality or functionality of venison or non-velvet co-products for use in marketing, hence there are no strategic research needs in this area.</p> <p>Accordingly, this objective should be confined to the tactical investment of minimising product wastage, which is an issue affecting all exporters. Once the cause of wastage has been determined, a small amount of funding will be required to propose systems capable of implementation to address the problem, so a small amount of funding in each year is required.</p>

Commentary

New pan-sector research unlikely

While the deer industry is in a rebuilding phase with contracting levy returns, research that could benefit the deer industry but from which the greatest benefit share would fall elsewhere, such as to cattle farmers or sheep and beef processing plants, will not be funded except in exceptional circumstances such as where non-participation could present a significant and imminent freedom-to-operate or market access threat.

'Feeding' research will no longer be a research objective in itself

In particular, DEEResearch will not commission any strategic research into growing forages or managing plant pests as these topics are of wider pastoral sector interest and can be best commissioned and managed at pan-pastoral level if there is a compelling collective interest. DEEResearch may nevertheless invest into the optimum management of commercially available forages in deer systems, particularly their effect on the environment as this research would have a clearer deer industry impact.

Practice change investments will cease

Previously it was intended that 15-20% of DEEResearch investment in FY18 to FY20 be into the "efficient land use" research theme, with a view to investment thereafter diminishing to around 5% annually once DINZ's Passion2Profit programme had taken on all deer industry practice change responsibilities. Passion2Profit has grown its practice change expertise and capability to such an extent that there is no need for DEEResearch to commission pure practice change initiatives; instead, DEEResearch will work closely with DINZ to ensure it commissions research in areas of industry need and produces outputs directed towards those needs and capable of adoption.

Research into efficient land use is not a deer-specific topic warranting strategic investment; however, research investigating where deer production fits best in a farming system or deer farming's effect on natural capital could fall for consideration under the 'Growing deer' or 'Caring for the environment' research themes respectively.

Climate change mitigation will continue to receive funding

Since the primary sector's contribution to climate change continues to be of societal focus, together with a growing expectation that the primary sector should participate in and bear the cost of New Zealand transitioning to a lower carbon economy, DEEResearch will continue its strategic investments into pan-pastoral research on methane mitigation. This research may not have immediate benefit to the deer industry in the short term, but has potential for longer term gain.

Largest area of investment to become Caring for deer

The most significant area of research investment over the period FY18 – FY21, following increases in previous years, falls to Caring for deer. However, as both a research and implementation tool, the use of genetics under both Caring for deer and Growing deer has been and will remain in the years to FY21 the most significant science investment by value. DEEResearch recognises the significant capacity of genetic information to assist the NZ deer industry meet its medium to long term targets, by producing a permanent gain in productivity.

Significant investment into Caring for deer is partly the legacy of DEEResearch's decision to investigate the merit of using genomics to select deer that are resilient to animal health challenges. The other part of that legacy is DEEResearch's acceptance that management of parasitism in deer is the single most important health issue facing the NZ deer industry, hence investment into different aspects of parasitology is warranted.

Significant investment into Growing deer is the legacy of DEEResearch's decision to invest in the platform (Deer Select) by which deer can be ranked and selected based on their genetic capability to exhibit traits of value to the deer industry. That platform can eventually be based on traits that are predicted by genomic technologies rather than traditional phenotype recording as at present, hence investment into Growing deer should increase if the genomic-based investigations made under Caring for deer prove successful.

Caring for the environment to receive greater investment

A significant change is DEEResearch's acceptance that strategic – rather than purely tactical - investment is required into the area of caring for the environment. It is a strategic objective of DINZ that deer farming be a sustainable industry which, besides purely economic considerations includes the concept of not creating adverse environmental effects on the community. To maintain deer farming's social licence and credentials with consumers of its products, the industry needs to further its understanding of how to achieve the lowest environmental impact while maintaining profitability. It is not proposed to invest in any processing-related environmental research since this is not a deer-specific strategic issue.

ANNEX: DINZ STRATEGY SUMMARY

A Confident and Growing Deer Industry				
Strategic Objectives:	<i>Premium positioning for our products</i>	<i>Market Development and Diversification</i>	<i>Sustainable on-farm value creation</i>	<i>Cohesive and Respected Industry</i>
	Maintain systems that provide robust assurance of the integrity and quality of New Zealand deer products	Develop demand for deer products outside of their traditional supply channels to mitigate market concentration risk	Create an environment in which deer farmers continuously improve their operations to deliver greater value more efficiently	Ensure sufficient communication between industry participants to allow effective sharing of ideas, information, support and confidence
Subsidiary Goals:	Communicate the quality and integrity and benefits of our deer products to customers and consumers	Encourage building of relationships with in-market partners who respect our products and add value	Ensure deer farmers can succeed while operating within their communities' environmentally and ethical expectations	Ensure that the deer industry continues to be considered an innovative and attractive but mainstream industry
2020 Targets: Venison	<ul style="list-style-type: none"> • Venison pricing relative to equivalent beef, lamb ++ • Venison pricing relative to other game items ++ • Consumer/customer recall/preference ++ 	<ul style="list-style-type: none"> • Proportion of venison sold chilled (>20%) • Proportion of venison sold to Eurozone (<50%) • Proportion of venison sold in N. America and Asia (>40%) 	<ul style="list-style-type: none"> • P2P programme participation (>25%) of industry • Survival to sale (+5%) • Kill date (-16 days) • Carcass weight (+2kg) 	<ul style="list-style-type: none"> • Industry event attendance ++ • Media and website readership (+100%) • Deer farmer satisfaction survey (+50%)
2020 Targets: Velvet and co-products	<ul style="list-style-type: none"> • NZ velvet pricing relative to competitors ++ • Preference of OMD sector for NZ velvet ++ • Preference of healthy food sector for NZ velvet ++ • Co-products FOB price ++ 	<ul style="list-style-type: none"> • Proportion of velvet sold into healthy food applications (>40%) • (>30%) of velvet exported processed, not frozen • No country imports >50% of New Zealand's velvet 	<ul style="list-style-type: none"> • (>50%) industry has environmental plan • (>50%) industry has Health&safety plan • NVSB compliance (>95%) • Animal welfare prosecutions involving deer (<5PA) 	<ul style="list-style-type: none"> • Survey attitudes to industry of non-deer farmers (+50%) • Deer specific training attendance (+50%) • Deer industry media mentions (+50%)



Website www.DEERresearch.org.nz

Email info@deerresearch.org.nz

Phone (04) 473 4500

Fax (04) 472 5549

Postal address c/o PO Box 10702, WELLINGTON