



5 YEAR **SCIENCE STRATEGY**



CONTENTS

1. OWNERSHIP, VERSION CONTROL AND DURATION	2
2. PURPOSE	2
3. SUPPORTING INFORMATION	
3.1. Deer Industry New Zealand Strategy Summary	2
3.2. DEER Research Statement of Purpose and Research Objectives	2
4. RESEARCH STRATEGY	3
4.1. Commentary	4
ANNEX 1: DINZ STRATEGY SUMMARY	5
ANNEX 2: DEER RESEARCH RESEARCH OBJECTIVES	5

1. 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	1.0	27 August 2015
Previous versions	n/a	n/a

2. PURPOSE

The purpose of this document is to provide the link between-

- the high level-
 - o DINZ strategies; and
 - o DEEResearch’s statement of purpose, objectives and research objectives; and
- the specific science project investments made by DEEResearch.

3. SUPPORTING INFORMATION

3.1. Deer Industry New Zealand Strategy Summary

The relevant strategic objective from the Deer Industry New Zealand (‘DINZ’) strategy summary (contained in full in Annex 1) is

Sustainable on-farm efficiency growth

Subsidiary goals for this strategic objective are:

- Create an environment in which deer farmers continuously improve their farm operations to increase efficiency of production; and*
- Ensure deer farmers can succeed while operating in an environmental and ethically sustainable way.*

3.2. DEEResearch Statement of Purpose and Research Objectives

The DEEResearch statement of purpose is

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

DEEResearch’s current research objectives (described fully in Annex 2) concern the following themes:

1. Efficient land use
2. Feeding
3. Animal health
4. Genetics
5. Venison attributes (intrinsic and extrinsic)
6. Environment (greenhouse gas emissions)
7. Environment (water quality)
8. Animal welfare
9. Food safety (emerging regulatory requirements)
10. Traceability (adding value)

DEEResearch science projects: current investment

The DEEResearch budget for FY14/15 includes investment in strategic and tactical areas. Major investments are described in the previous year's *DEEResearch Research Programme 2013-2014* and the size and duration of these funding investments are summarised in Table 1.

Table 1: DEEResearch budget FY14/15

	Project	Funding (\$K) by source			Project Duration
		DINZ	AgResearch	Landcorp	
Strategic Investments	Hitting Targets	458	1,333	100	FY14-18
	Pastoral Greenhouse Gas Research Consortium	35	0	0	FY13-17
	Pastoral Genomics	6	0	0	FY03-15
	PG+	34	0	0	FY15-17
Tactical Investments	Molecular markers for resistance and susceptibility to Jd	80	0	0	FY15-17
	Cervine anthelmintic residue studies	16	0	0	FY13-15

4. DEERESEARCH RESEARCH STRATEGY

Research investment decisions are focussed on projects that create on-going industry impacts through sustained practice change across the majority of NZ venison producers. These impacts include improved profitability (through both increased product quality and quantity) as well as maintaining freedom to operate and market access.

Research investments are classified as either strategic or tactical in nature. Strategic investments are those where the objectives are broad in scope and the outputs can potentially be applied in a variety of ways. Tactical investments have a narrow, and often short term focus, that are funded in response to contemporary industry needs.

Most research funds are invested in the Hitting Targets project and the rationale for the breakdown of investment in each DEEResearch research objective is described in the annual project plan that is approved each year by the DEEResearch board.

Other DEEResearch strategic investments are very minor components of major research projects, with these investments primarily made to maintain access to research that is of benefit to the larger pastoral sector. This research may not have immediate benefit to the deer industry in the short term, but has potential for gain longer term.

The recommended investment profile in each DEEResearch research objective for the next 5 years is summarised in Figure 1 and the rationale provided in Table 2.

Figure 1: Total investment profile in DEEResearch research objectives FY15/16-FY19/20

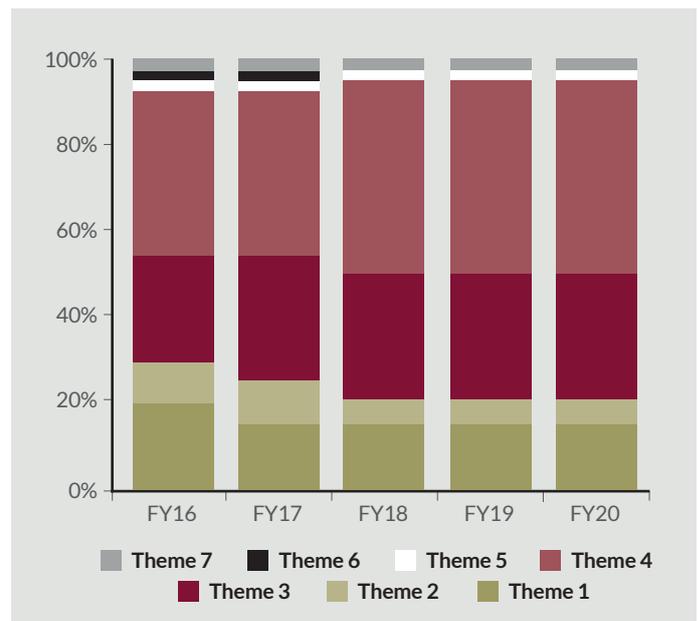


Table 2: Strategic reasons for investment in each DEEResearch research objective

Research objective	Strategic reasons for investment or non-investment
1. Efficient Land Use	<ul style="list-style-type: none"> Diverse range of programmes that have generalised outcomes including adoption & practice change, farm systems modelling, remote sensing, decision support tools for farmers
2. Feeding	<ul style="list-style-type: none"> On-going need for specific deer feeding issues as farming systems continue to evolve.
3. Animal Health	<ul style="list-style-type: none"> Management of impact of parasitism in deer is the most important health issue for deer farmers. Specific issues to address include: <ul style="list-style-type: none"> Withholding periods for anthelmintic use (market access / farm slaughter flexibility) Drug resistance (long term profitability) Focus on breeding disease-resistant animals
4. Genetics	<ul style="list-style-type: none"> Provides permanent increase in animal productivity and other factors that will influence farmer profitability
5. Venison attributes	<ul style="list-style-type: none"> Covered to some extent through research objective 4 Greater industry incentive required for additional resources to be invested
6. Environment (greenhouse gas emissions)	<ul style="list-style-type: none"> Minor issue for industry currently Investment in PGGRC provides access to science in long term
7. Environment (water quality)	<ul style="list-style-type: none"> Minor issue for industry currently In the longer term, may be market access & freedom to operate issues
8. Animal welfare	<ul style="list-style-type: none"> No current pressing needs – large historical investments have enabled good farmer positioning on animal welfare
9. Food safety (emerging regulatory requirements)	<ul style="list-style-type: none"> Needs being addressed through other funding mechanisms (eg through MIA partnership)
10. Traceability (adding value)	<ul style="list-style-type: none"> No current specific research demand

4.1. Commentary

Research investments for the next five years are mainly in Research Objectives 4 (Genetics), 3 (Animal Health) and 1 (Efficient Land Use). Research in Genetics is the most significant area of science delivery that will assist the NZ deer industry meet its medium to long term targets, by producing a permanent gain in productivity. The management of parasitism in deer is the single most important health issue facing the NZ deer industry, with an urgent need for deer-specific solutions to prevent parasitism becoming a major production-limiting disease. Research on farm systems modelling and activities in adoption/uptake are classified in Efficient Land Use, with these investments essential in delivering the benefits of component research in a farm systems context.

Minor investments are also recommended in Research Objectives 2 (Feeding), 5 (Venison Attributes – intrinsic and extrinsic), 6 (Environment – greenhouse gas mitigations) and 7 (Environment – water quality) as these are currently all research areas of medium to high priority. Due to the limited amounts of funds that are available, it is recommended that there be no investment in Research Objectives 8 (Animal Welfare), 9 (Food Safety) or 10 (Traceability), which are currently regarded as the lowest priority areas.

As the focus of tactical research is difficult to predict, tactical research beyond FY15 has not been included in the overall five-year investment profile of DEEResearch funds, although it would be prudent to set aside a small budget allowance from DINZ funds (approx. \$50-100k pa) to allow for ongoing tactical research.

It is recommended that the amount of investment in Research Objective 1 (Efficient Land Use) reduces with time, with additional resourcing provided from the P2P programme (Figure 2).

Figure 2: Changing investment profile in the DEEResearch Efficient Land Use research objective



ANNEX 1: DINZ STRATEGY SUMMARY

A Confident and Growing Deer Industry				
Strategic Objectives	Premium positioning for our Products	Market Development and Diversification	Sustainable on-farm value creation	Cohesive and Respectable Industry
	Maintain systems that provide robust assurance of the integrity and quality of New Zealand deer products mitigate market concentration risk	Develop demand for deer products outside of their traditional geographic and use-type markets to efficiency of production and confidence	Create and environment in which deer farmers continuously improve their farm operations to increase ideas, information, support	Ensure sufficient communication between industry participants to allow effective sharing of
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%)

ANNEX 2: DEER RESEARCH RESEARCH OBJECTIVES

All research will be designed to meet at least one of the following research objectives. Research objectives that must be included in DEEResearch's research programme are **highlighted in bold**. Remaining objectives may be included in the research programme.

Where a target is specified, projects to meet the objective in question must be designed to produce an output whose uptake (assumed at 65% of all venison producers after ten years, where the end point is 30 June 2023) will meet or significantly contribute towards meeting the target and project success will be evaluated against the industry's achievement of the target recognising that other factors besides the project alone are relevant to achievement of the target.

1. Efficient land use

Existing and potential deer farmers can readily identify-

- circumstances in which farming deer (whether solely or in an integrated system) is an economic land-use option over the medium-to-long term; and
- **in the case of deer being economic only in an integrated system, the key features (including targets) for optimal production (e.g. species mix, feed requirements, feed production, paddock rotations, stocking rates, growth targets).**

2. Feeding

Optimal feed production or feeding regimens or tools are identified to-	Targets
<ul style="list-style-type: none"> • produce venison at the size and time required by the market; 	<p>A. national average carcase weight increases annually by 1.5% from 55kg to 64kg over ten years</p> <p>B. national average hind output efficiency increases annually by 2% from 0.36kg output/kg hind to 0.44kg output/kg hind over ten years</p> <p>C. national average age at slaughter brought forward annually by 0.36% over ten years (i.e. 16 days earlier) (16.19 months (492 days) to 15.65 months (476 days) for hinds and 12.93 months (393 days) to 12.4 months (377 days) for stags</p>
<ul style="list-style-type: none"> • make efficient use of land, new pasture and cropping technologies and cultivars or 	<p>D. national average feed conversion rate increases annually by 0.7% from 58kg DM to produce 1kg useable output to 54kg DM to produce 1kg useable output over ten years</p>
<ul style="list-style-type: none"> • improve reproductive efficiency of deer. 	<p>E. national average breeding hind liveweight increases annually by 0.45% from 110kg to 115kg over ten years</p>

3. Animal health

Optimal healthcare regimens or tools are identified or developed for deer to-	Targets
<ul style="list-style-type: none"> • improve their reproductive efficiency; 	<p>E. national average breeding hind liveweight increases annually by 0.45% from 110kg to 115kg over ten years</p>
<ul style="list-style-type: none"> • facilitate their meeting of growth targets; or 	<p>C. national average age at slaughter brought forward annually by 0.36% over ten years (i.e. 16 days earlier) (16.19 months (492 days) to 15.65 months (476 days) for hinds and 12.93 months (393 days) to 12.4 months (377 days) for stags</p>
<ul style="list-style-type: none"> • reduce their vulnerability to production-limiting diseases. 	<p>F. national herd survival to sale increases annually by 1.05% from 72% to 80% over 10 year</p>

4. Genetics

	Targets
<p>Accurate genetic parameters are determined to support appropriate indexes covering the traits identified by the deer industry's National Breeding Objective.</p>	<p>A. national average carcase weight increases annually by 1.5% from 55kg to 64kg over ten years</p> <p>B. national average hind output efficiency increases annually by 2% from 0.36kg output/kg hind to 0.44kg output/kg hind over ten years</p> <p>C. national average age at slaughter brought forward annually by 0.36% over ten years (i.e. 16 days earlier) (16.19 months (492 days) to 15.65 months (476 days) for hinds and 12.93 months (393 days) to 12.4 months (377 days) for stags</p>

5. Venison attributes (intrinsic and extrinsic)

Elements of production and processing systems that-

- affect the taste, appearance, safety or quality of venison; or
- produce the types of products preferred by customers, are optimised.

6. Environment (greenhouse gas emissions)

On-farm, in-plant or transport systems employed in the deer industry are optimised to reduce their greenhouse-gas emissions intensity.

7. Environment (water quality)

Diffuse nitrogen and phosphorus losses from a deer production system that contaminate waterways may be minimised through availability of-

- a fit-for-purpose tool to estimate the quantum and sources of such losses; and
- best practice management advice.

8. Animal welfare

Venison production and slaughter systems are optimised to meet-

- New Zealanders' and consumers' animal welfare expectations; and
- new regulatory requirements domestically and in overseas venison markets.

9. Food safety (emerging regulatory requirements)

Best management practices pertaining to-

- production systems (including veterinary medicine or vaccine administration and pesticide use);
 - processing;
 - packaging;
 - storage; or
 - transport,
- are identified to meet new food safety regulatory requirements domestically or in overseas venison markets.

10. Traceability (adding value)

Technologies available to producers or processors enabling consumers to identify the origin of venison are developed.



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