

Dear 'O' Deer



Psychological Predisposition of an Industry

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Executive Summary

The deer industry struggles to shake off the perception of being a young industry with growing pains. Product price volatility contributes to banks, farm advisors and the media being wary of promoting this relatively small industry. The *entrepreneurs* who initially developed the industry are now retiring, exposing a lack of new and younger deer farmers. Encouragement of a new generation of low risk taking and successful farmers is needed to stabilize and grow the industries perception, as being an attractive and viable farming alternative.

To be successful the deer industry needs to attract a higher proportion of people with a *cautious strategist* approach rather than a *gamblers* approach. Encouraging the *cautious strategist* requires patience, accessible information and industry stability, distributed through a wide network of monitor farms, industry conferences and media sources. The decision process involved in adopting an industry follows a logical pattern of information gathering, decision making and acceptance or rejection of new ideas. Perception will play a large part in stabilizing an industry known for its dramatic boom bust cycles.

Fundamentally the deer industry is in a unique position to capitalize on the strong leadership shown by Deer Industry New Zealand (DINZ) and industry partners during the last five years of low product prices, to re-brand the industry as being positive, with a stable outlook based on an exciting history.

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Introduction

The deer industry is facing a dilemma of diminishing numbers of both capital stock and active deer farmers caused by a variety of factors including, low product prices, an aging deer farmer population and alternative farming options. The industry carries a hangover perception of its exciting and risky history, which can be off-putting to any potential industry entrants.

The aim of this project was to examine the perception that the wider agricultural industry has of the deer farming industry. Determine how this perception characterises the makeup of people involved within the industry and develop an understanding of the types of people the industry must encourage to ultimately become sustainable with a perception of success.

Step one involved doing a basic history of the deer industry highlighting the key points that shaped the industry up until present day. This was followed by extensive interviews with a variety of people involved within the agricultural industry but not actually deer farmers in their own right. These people included the rural banking managers of most of Southland's banks, media personalities of major farming magazines and radio shows, rural agricultural consultants, government agricultural spokesmen/MP's, and also interviewing agriculture teachers at various schools and polytechnics.

Using this information in combination with *Rolf Olsson's "Management for success in modern agriculture"* (1988) the characteristics of the deer industry were

developed, so as to hypothesize the attributes that make up successful individuals within the deer farming community. These attributes would allow an entity to know which characteristics to target and promote and the decision process in which individuals go through in accepting change.

The outcome would be the foundations of a planned marketing approach for an industry, which encourages new entrants into a successful, sustainable and invigorating industry.



History and evolution of deer farming

Over 200 liberations of deer from eleven different species occurred in New Zealand between 1851 and the early 1900's with the intention of establishing game parks for English sportsmen. Of these, seven became established with the Red deer becoming the dominant feral species. Deer populations quickly expanded due to favourable food supplies, climate and lack of natural predators.

However by the mid to late 1920's it was becoming apparent that deer were causing immeasurable damage to New Zealand's indigenous ecosystems. This led to the Government of the day mounting a structured campaign which involved professional hunters culling deer. George Yerex was appointed as officer-in-charge of deer control and in 1934 over 100,000 deer were culled. Deer culling was halted during the war years of 1939-45, allowing feral deer numbers to increase rapidly again. By the 1950's, 100,000 deer were being culled yearly by private and government hunters. It was during this period that an export industry revolving around deer skins took off. Up to 60,000 dried skins fetching as much as £3 each were exported some seasons.

The 1950's also saw the first exports of venison to the USA and a fledging venison export industry was born. As demand grew for the product, the price rose correspondingly encouraging innovation in feral harvest and recovery into providing enough venison, eventually leading to the use of helicopter "gunships". The helicopter proved so successful as the ultimate tool, that it started to become uneconomical to hunt deer due to the decreasing numbers of feral animals.

New Zealand's farmed deer industry was born out of the venison recovery era, "*New Zealand's last Great Adventure*" (Peat 2005), where the names of Sir Peter Elworthy, Sir Tim Wallis, Bernard Pinney, the Taylor Brothers of Westdome and Rex Giles of Rahana Station Taupo are synonymous with the industry foundations and foresight of some of the countries most entrepreneurial agricultural personalities of the early to mid 1970's.

The velvet industry also contributed significantly towards the initial profitability of deer farming, as velvet retrieved from the commercial shooting of feral animals tended to be harvested at the wrong stage of growth and was of poor quality. Bill Bong an Oriental medicines dealer from China, initiated the original thoughts of farming stags in the mid 1960's, to harvest velvet at the correct growth stage. Velvet was also important in that it initially provided some stability into the industry, in that it was high-value and could be harvested from the same animal year after year. Importations of stags from English game parks and Elk from North America during the early 1990's further enhanced NZ reputation for quality velvet and improved the breeding of the original farmed feral stock. Oriental medicine also contributed to the deer by-products industry with sales of sinews, pizzels, internal organs, embryos and blood adding value to the animal.

The impact the German venison market has had on the development of the New Zealand deer industry can not be underestimated. Periodic visits by West German vets during the 1970's to inspect processing and packing conditions provided a strong venison link between the two countries. Germans have an acquired taste for wild

game meats and still consumes the bulk of venison produced in New Zealand, although that reliance has decreased over the last few years as diversification into new markets takes effect. The differentiation between venison as a wild game and farmed meat allowed special import tariffs into Germany at much lower rates. Development of the German market and the USA markets during the 1980's continued to expand the deer farming industry in New Zealand. The 'Cervena' appellation was launched into the USA market in 1992 as a distinctive brand name to differentiate quality and to be known as farm raised New Zealand Venison.



The sense of adventure, the challenge of farming a previously unfarmed wild animal and the prospect of large profits attracted scores of enthusiastic, entrepreneurial, professional and to some extent, gambler type people into the fledging industry. The sensation being part of, and developing a new industry was

appealing to a generation of farmers, disillusioned with the traditional farming industries. They became the logical partners of many urban professional business sector investors and hence the industry was born. The search for knowledge also instigated the opening of various research centres around the country, most notably Invermay at Mosgiel, Otago.

Generous government taxation policy at the time encouraged investment from outside the agricultural sector, resulting in a “gold rush” with exorbitant prices being paid to secure breeding stock. This investment although not always for the right reasons was critical for the industry to become viable in its infancy. The famed \$3000 price tag for hinds encouraged people to breed and capture more animals establishing the growth momentum that the industry required to survive its initial years. Most importantly that headlong rush fuelled by city investment also sparked the desire to develop the industry outside the typically troubled meat industry, and for these early industry promoters to establish the foundations and structures that have kept the development of the deer industry leading in many areas of structure, QA, marketing and relationships.

The general enthusiasm of the early days of deer farming can't be illustrated more than when 1000 people attended the Auckland Deer Farmers Conference in 1980. Founded in 1975 with just 25 founding members the DFA recruited professional executive services and set out to fight Government for the rights of deer farmers in almost every area of legislation that had once opposed the farming of a formally described feral pest, which actually had just shed its noxious status. Some of those laws still impact on the industry today in that the right to farm deer is still under

the jurisdiction of DOC and the outmoded, inappropriate Wild Animal Control Act (1977).

It was at this conference that deer farmers realized that they were going to need marketing and promotion of deer products. The way to collect the necessary funds to achieve this was via compulsory levies, which lead to the establishment Game Industry Board in February 1984 after vigorous political lobbying, and meticulous planning by the DFA's pioneer founders.

The industry has been subjected to a cycle of boom bust fluctuations as it has established its position on the New Zealand agricultural scene. Taxation changes in 1979-80 caused the first major crash as city investors lost the attraction of lucrative taxation write downs. Even though some speculators who had purchased large numbers of animals at unsustainable prices were forced into bankruptcy some industry good occurred with the construction of several deer slaughter premises (DSP's) and the agreement of the West German market to accept farm raised venison, with a game classification rather than as farmed meat, which remains an important distinction in terms of tariffs' and trade today.

Worldwide concerns such as Chernobyl, BSE, SARS and FMD have had major impacts on venison prices as consumers switch to perceived "safer" proteins, causing a short term spike in venison prices. Low critical mass of deer available for slaughter at times has compounded venison price increases and encouraged farmers to build up deer numbers. This creates an over supply when consumers switch back to cheaper

meat proteins after the realisation that the traditional meat products were still safe to consume.

Each bust has seen the perception and confidence of the industry shaken to the point that it has become difficult to attract new people. This is having a flow on effect, in that the original people in the industry are now closing in on their retirement and choosing to exit the industry while at the same time few new entrants are coming into the industry. The people who have lead the industry have generally been passionate about the animal and its products especially velvet. A survey of DFA branches (September 2008), show that 29% of active farmers on the committees are focused on antler genetics, and the total deer numbers that make up this sector of the industry are less than 15% with a direct revenue stream of ~10% year end 2007 (Appendix B; Figure 10, Export Earnings from Deer Products (Source DINZ Annual Reports).

Currently market and farm gate prices for venison are increasing as a shortage of supply and the affects of industry promotional activities take effect. Most venison marketers agree, currently that the market could comfortably handle 650,000 deer per year. Predictions for the 2008/09 season were projected to be as low as 400-450,000 off a high of nearly 740,000 in the 2006-07 season. In fact the 2008 production pattern has remained very high with an expected 620-630,000 animals to be slaughtered The high kill is dominated by a high hind kill (57%) as a consequence of farmer exits, following the competitive acquisition of land for dairy farming and the new fashion “dairy support” on class 2 and 3 land. The major impacts of drought in the north where competing for stock feed is uneconomic for deer farmers, and the

consequence of drought across NZ on hind in calf rates is also having an effect on the number of capital hinds being killed. As venison prices builds to the seasonal September-October peak (Sept 2008 weighted average \$9.68/kg) other farmers are exiting, fearing a return to boom bust. The consequences are predicted to be a dramatic fall off to 400,000 or less in 2008/09 season with consequent pressures in the market as undersupply is a reality ensuring that these current prices are likely to be sustainable for some considerable time.

Looking ahead “.....*the industry must build on the gains made to date. There are on going challenges such as resistance to change, competition from competing land uses, increasing costs of doing business and environmental considerations including climate change. To be economically relevant, returns from deer farming for producers, processors and marketers need to be higher over a sustained period.....*”(J. Scurr, DINZ annual report 2006-2007,p.2). In essence to achieve these expectations the industry must find a process of sustainable growth that minimizes industry fluctuations in price and animal numbers.

History of New Zealand's Deer Industry

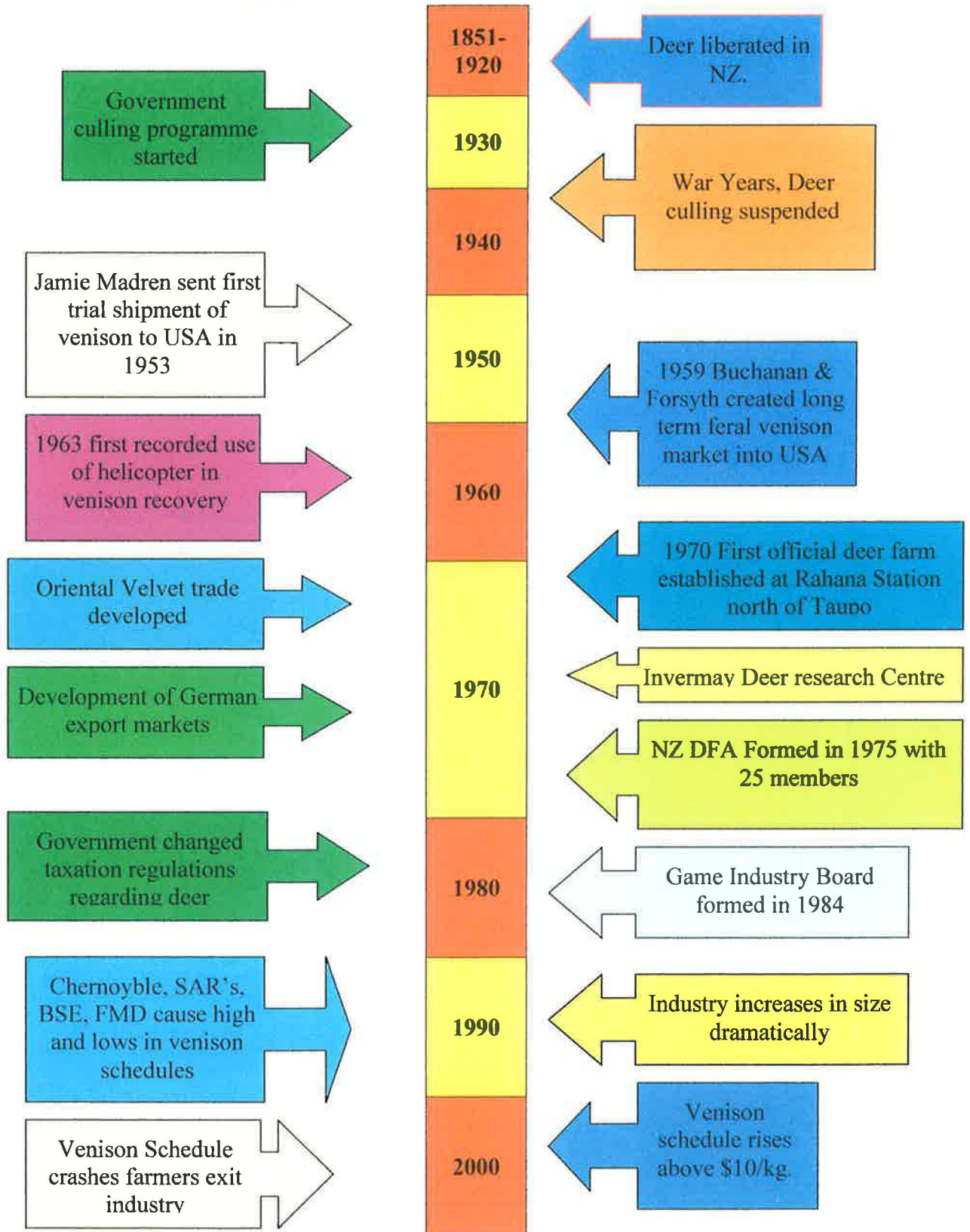


Figure 1; Time line New Zealands Deer Industry

Current State of New Zealand's Deer Farming Industry

New Zealand's Deer industry is currently at a crossroad, as the industry tries to resurrect itself from 5 years of uneconomical returns and a mass exodus of farmers from the industry. The people that have survived the turmoil tended to be established farmers with a passion for the industry. The average age of deer farmers is suspected to be about 55-57, compared to sheep and beef farmers of about 52 (*source; Meat & Wool New Zealand labour data 2008*). This has not always been the case as when deer farming first started; the average age was in the mid 30's. These farmers are now, 30-35 years on, approaching retirement and exiting the industry for various reasons. The incentive to sell to dairying or to sheep and beef farmers (cashed up from selling high value dairy land) with no deer experience is very tempting.

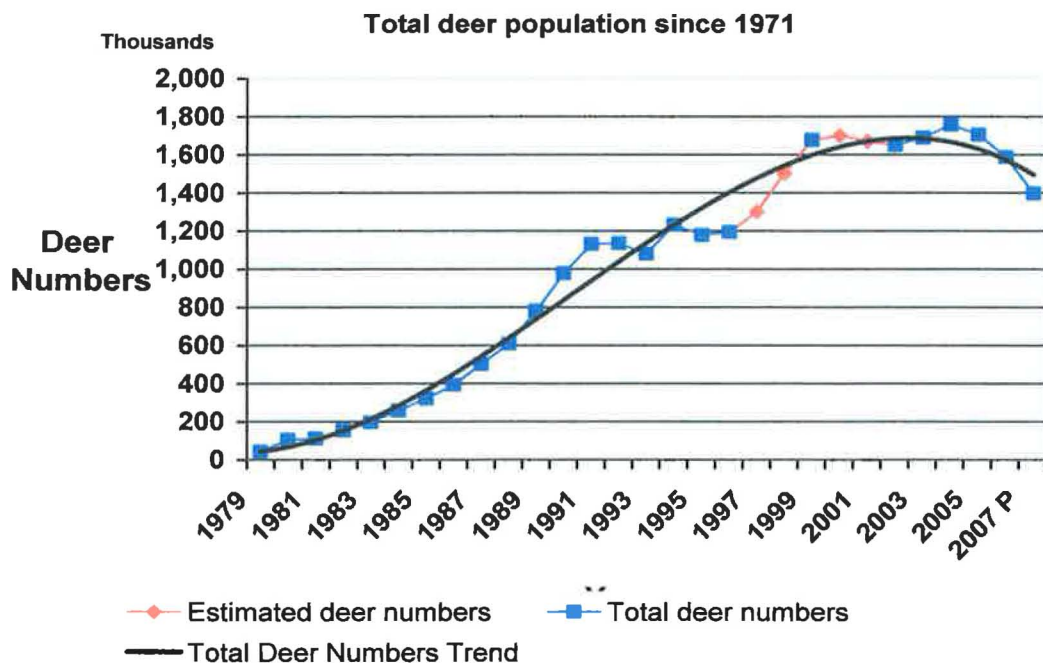


Figure 2; National deer numbers

As *figure 2* depicts the deer industry has grown quickly from small numbers of

animals in the early 1980's into a considerable sized industry by the mid 2000's. However fluctuations in the kill pattern and total animal numbers are having a large effect on the stability of the industry. The industry has been through a record kill period, with slaughter figures approaching 740,000 animals in the 2006-07 season dropping rapidly to a predicted 400,000 animals for the approaching 2008-09 season. Such fluctuations on supply are causing major challenges for marketers in supplying enough product, especially to new markets developed during the period of oversupply. Correspondingly this is causing schedule prices to rise rapidly.

The challenge for the industry is to encourage more entrants into the industry without too many entering at once and shorting supply as they retain breeding hinds, which eventually leads to a rapid increase in production as they start breeding. The people that need to be attracted must understand the basic industry fundamentals and be committed to the industry long term.

Credit must go to the board of DINZ (Deer Industry New Zealand) who have recognized these issues facing the industry and have provided strong leadership and developed 3 key industry agreed (Venison marketing, Velvet antler marketing, and Productivity) strategies to try and mitigate these dilemmas. The DINZ Board has a strong working relationship with the major venison exporting companies, some of whom have representatives on the DINZ board, and they generally work positively with each other in the market. DINZ levy money spent on generic promotion is leveraged from the individual companies own marketing budgets. Due to this co-operation, most of the venison produced during the period of oversupply was marketed without dumping or sacrificing the lucrative long term markets. The

protection of these high value markets was essential once the predicted drop in supply occurred.

The initiative of DINZ to fund the development of a series of focus farms around the country (following on from the success of two “Sustainable Farming Fund” focus farms in Southland and Otago) has been instrumental in attracting a new and much younger group of farmers along to field days. This is not only helping to produce production gains but is also exposing new people to the industry. The reports of 150 people, many of whom were younger, attending a field day earlier this year in the Hawke’s Bay is testament to this.

The move to promote deer farming as being profitable on the class 2 and higher land where it is not competing against dairying is seen as a positive strategy to encourage people back to the industry. Publication of “Key Production Indicators” (KPI’s), \$/KgDM produced, \$/SU or return on capital and labour will all contribute to the revitalization of this industry.

The fundamentals of the deer industry are all sound, with key market strategies and industry planning formed for the oncoming years. For the industry to succeed there has to be sustainable growth without the wild fluctuations of the past. New people must be encouraged into the industry and the perception of a boom/bust industry must be dispelled. With a reduced reliance on traditional European markets and the lengthening of the consumption period, the deer industry is well poised to take advantage of a worldwide shortage of protein and search for healthier eating habits.

Perception of the deer industry

Interviews were undertaken amongst a variety of people (refer to acknowledgements), that have an influence upon the agricultural sector, including the deer sector. The results from these interviews tended to show that an industry's reputation is built on individual perceptions formed over time. As a persons specific perceptions of individual traits within an industry become more entrenched over time, the industries reputation becomes more established to the general population. In most cases the people that were interviewed had very similar perceptions of the industry. Once these perceptions become engrained within the agricultural society, it takes significant time, if ever, to alter the reputation that the industry has developed.

The general perception of the industry from the wider agricultural industry is that it is both a good news industry and a bad news industry. The industry is still very young when compared to other agricultural based systems. It is still in a position where it can decide its own fate as long as the right decisions are made now to provide sustainable and regular returns and not the cyclical highs and lows that have dominated the industry since its conception. The foresight, when someone first decided to farm deer, was that it might one day come to fruition and a sustainable successful industry might develop long term. The reality is, it is yet still to be achieved in the minds of many.

Deer are known as an endearing and invigorating animal to farm and are actually a pleasure to be seen especially when farmed in the right surroundings. There is enough information available for farmers to mitigate any of the perceived problems

of wallowing and fencing practices that caused some of the initial environmental concerns/misconceptions (Deer Industry Landcare Manual 2004) that the public may have held concerning the industry. Problems usually arose on land that didn't suit deer. People need to be pragmatic over these issues and embrace the image of deer on hill country. Most people have now had exposure to well managed and run deer farms and realize that they are high performance systems. There used to be a perception that the animals were difficult to work with, however that is now becoming less of an issue due to the intensive culling regimes that have been forced on the industry over the last 4-5 years of low product prices.

Commentators from outside the industry have been unanimous regarding the positive attributes of the meat, especially its lean and healthy properties. Product marketing has been fantastic and this has been well promoted by a very good marketing team and key high profile industry trained chiefs. They have truly promoted the product to attain the value add in the hospitality and increasingly important retail trade, enabling the product to sell at a premium. Concern was expressed at the lack of opportunity to easily purchase the product locally, as most people would like the opportunity to prepare special meals on special occasions. Similar to the *Impress your Guest Marketing* initiative DINZ has in Europe.

Heavy reliance on the continental Europe markets especially Germany, is seen as a problem that needs to be solved to prevent market fluctuations and provide stability and consistent pricing. Leading players like Silver Fern Farms have shrunk that reliance quite dramatically (64% down to 38%), and established new relationships with high value retail targeted supermarket chain outlets especially in

the Benelux countries and Scandinavia. Most people interviewed were relatively unaware of the diversification the venison industry has undertaken over the past few years to protect the profitable markets and to expand into non-traditional markets. Now that supply is decreasing there is demand for product outside the traditional pre 2001 markets allowing marketers choices on whom to supply.

Of all the pastoral species being farmed in New Zealand it is recognised that deer potentially have the some of the biggest improvements to be made in genetics and on farm production. This is due mainly in part to the industry being relatively young and other industries already having generations of intensive breeding selection.



Bankers, economist, and farm advisors all implied that if the industry showed some confidence and stability they would all be able to promote deer farming as a viable industry on the right class of land with more confidence. However they are reluctant to promote it while there is still the upheaval and the highs and lows in the

industry. Most people recognise that farmers have relatively short memories and would need at least 4-5 years of stability and economical returns before being attracted into or back into the industry. The lack of confidence in the industry is not attracting corporate investment, as is presently the case in the dairy industry where there is confidence in the brand and structure of FONTERRA. The banking industry had no fundamental concerns about the deer industry compared to other industries, but would only encourage investment depending on what the person is trying to achieve i.e. life style, growth of business, farm succession, type of property etc. The capital cost of setting up a deer farm is not seen as being prohibitive when this is relatively small (albeit higher than a sheep property) per portion of the total cost of the capital tied up in the land.

There is a belief that the industry needs to grow, but at a cautious pace so as not to undersupply markets before an oversupply occurs. Careful marketing of the potential benefits of deer farming need to be undertaken to encourage farmers to invest at a sensible growth rate. The right people need to be targeted, people who are committed to long term industry growth and not people who are only interested in making a quick dollar out of the industry in the short period. The entrepreneurial type people who pioneered the industry are now reaching retirement age and are being encouraged with the high land values at present to exit farming. The benefits of low labour units, lower costs structure, return on investment, lifestyle, usually great localities, and being part of a young invigorating industry must be extolled as part of any marketing plan to encourage sustainable investment within the industry.

The media both written and audio are willing to promote any story that creates a headline. Hence if deer farming was more of a profitable mainstream farming industry the New Zealand media would allocate more space and air time. Currently they feel that the industry gets reasonable representation considering its size in relation to other farming industries. The same feeling is apparent in the education system also. Agricultural teachers feel the industry is too small to devote to much curriculum time towards it, but use it as an example of a small entrepreneurial industry, with strong leadership and vision for its future.

The obvious conclusion after conducting a lot of time interviewing people, is that there is belief that the industry is fundamentally sound, and has a strong marketing strategy which has been severely limited by production fluctuations. The individual perceptions are that the industry has a tremendous advantage with the product it is trying to promote, the personal relationships that the industry has developed with its leaders due to its relatively small size, the uniqueness and mystique of a majestic animal well suited to New Zealand's environment. Albeit these images are sometimes tainted by images of "Bambi", poor farming practices and lack of knowledge of the deer industry outside of the industry. Confidence of the industry structure will be the biggest thing to lift perception. If people think that the industry is coordinated and that it is well lead and is capitalising on the shelf prices of the market then people will be attracted to the industry.

Reasons for these perceptions being similar could be due to the limited amount of information available to people, and most of the information that people receive is coming from the similar sources. It is therefore vital that more information is made

available to people from a variety of sources which are looking at the industry from different perspectives. Business people need information about the profitability and market forecasts, media need success stories that they can relate to and talk/write about, policy makers need a standout industry that they can quickly relate to, and other farmers need to see an industry where the perception is that the “grass is greener on the other side of the fence”.

Key Perception Points

1. Reputation of the industry is built upon individual perceptions.
2. Consistency will breed confidence which in turn will breed success.
3. Volatile industry.
4. Heavy reliance on traditional markets.
5. Small industry which punches above its weight.
6. Relatively young industry, which has massive potential for production gains.
7. Positive lean healthy attributes of the meat.
8. Velvets’ an aphrodisiac.
9. Unique and mystic animal to many people.
10. Entrepreneurial people involved.

Types of People Involved in the Industry

In order to understand how the deer industry can alter its reputation (as reputation is the generic perception of individuals) an understanding of the characteristics of the people that make up the deer industry must be understood. If farmers with the type of characteristic which are desirable for success can be attracted into the deer industry, a perception among individual personalities will begin to develop that will begin to alter the reputation of deer industry for the better. The more stable the industry is the more people will look to the industry as a viable alternative to existing farming practices.

Due to the age of the industry it is possible to characterise the types of people who have been involved in the industry and its development over time by classifying them into four classes/types of people (source: *Insulader et al., 1986* and *Rolf Olsson, Management for success in modern agriculture*).

Farm managers/decision makers are classified into four categories showing the relationships between risk and success. However there is no clear division between each sector and many people will exhibit characteristics of more than one sector. Not all farmers are the same and success can be achieved by different strategies, and the perception and definition of success can alter between individuals. Over time an individual can move between sectors due to circumstances like age, wealth creation, lifestyle creation and exposure to risk.

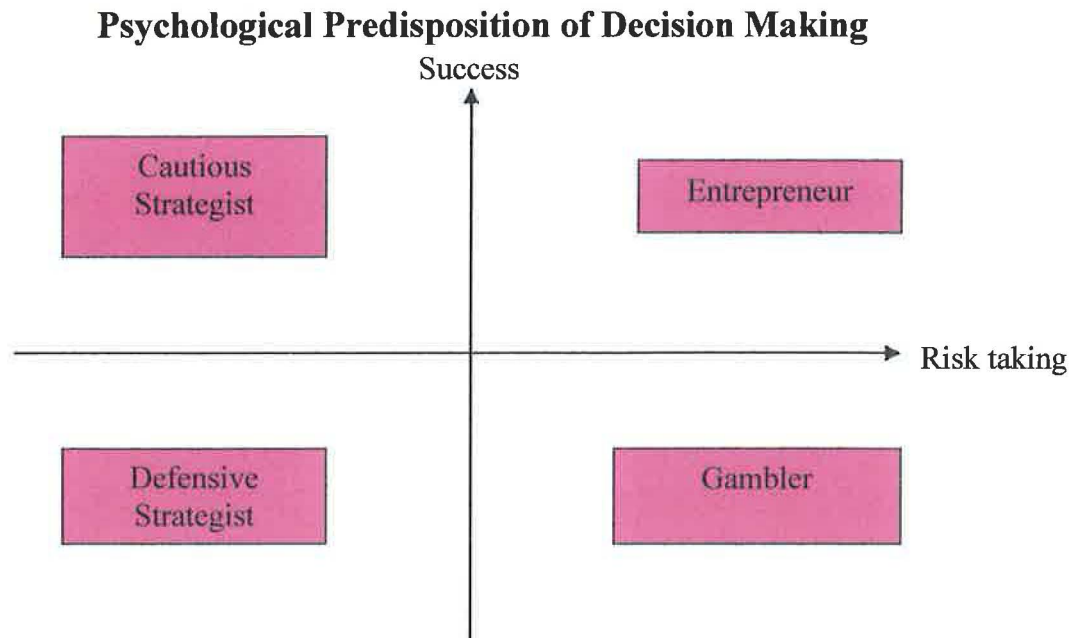


Figure 3: Psychological Predisposition of Decision Making;
Insulader et al., 1986

The Entrepreneur

Entrepreneurial agriculturalist's are confident in their business decisions and are prepared to take a risk in pursuit of success. They regard the industry as a business rather than a hobby. This person does not necessary need an agricultural background. They are the optimist within the industry, they do the background homework, seek informative advice prior to making decisions. The entrepreneur has a wide social and business network both within and outside the industry. Considerable time is devoted to planning and management before any decision is made. They are the people that identify an opportunity or niche that most people fail to see. Typically entrepreneurs are prevalent in the early stages of development of a product or in this case an industry.

The early years of the deer industry were full of these types of people. Examples within the industry are; the first people to identify a potential market for feral venison, the people who initially set up the first deer farms and realized the potential for the meat or velvet, the investors who financed the early years of this fledging industry. As there was no prior information on how to farm the animals most of the early ideas were trial and error, and generally the entrepreneur lead the way in developing new ideas. These visionary's also strongly influenced the key players in research and development areas, product development and service industries to capture some of that excitement and develop the tools for the future, often somewhat different than the quiet mainstream evolution in those areas. Today the entrepreneur is still prevalent within the industry, but there is not the same number of opportunities as when the industry was in its infancy.

Cautious Strategist

The *cautious strategist's* are the backbone of any industry, they are the people who consistently produce and are driven towards success without taking major risks. Generally they see farming as a lifestyle, not a job and provide most of the capital for their business. They do not make decisions that will jeopardise either themselves or their business and their goals have a long term focus. Information is gathered from likeminded people in arenas such as discussion groups, focus/monitor farms, industry workshops and conferences. They are kept up to date with relevant information via various media sources. Generally they are well educated, and are leaders in their

community/industry. These people are committed to their personal business and goals and withstand the highs and lows within the industry. The *cautious strategist's* do tend to come and go a bit as long term market/industry signals influence their decision making process, however they don't tend to make rash decisions and will be prepared to wait through short term price volatility. In most situations they have the ability to wait through the cyclical periods that industries go through due to them being less highly leveraged than newer entrants. Generally the *cautious strategist* personality starts to dominate a persons characteristic latter in life as people become more risk adverse due to individual circumstances, and less highly leveraged.

The farmers that have remained in the deer industry after the last five turbulent years could be categorized as being *cautious strategists*. Their goals have been survival and motivation to preserve the farm for the next generation and the environment. This type of person devotes endless hours towards developing and protecting their industry and business. Today's deer industry in the main is being lead by the cautious strategist from the successful deer farmers, strategic marketers, elected and volunteer personal, and industry decision makers. This is also shown by the five year strategic marketing plan developed by DINZ in association with deer farmers in general to form a vision for the future.

The Gambler

These types of people are involved with any industry or investment that is in vogue. Their rational is dominated by media hype. They are the fly by the seat of your pants today and think about the consequences tomorrow type of business person. As long as the industry is perceived to be profitable they will continue to be involved, but are the first to abandon the industry when the going gets tough. They are self consumed, egocentric and generally blame or criticise others if the consequences of their own decision making do not meet their often misinformed expectations. The *gambler* is not afraid to take significant risk and his decision making is very impulsive. Most people in bankruptcy or in a situation of crisis have the characteristics of the *gambler*. *Gamblers* can be reasonably successful in the short term but are usually unsuccessful long term.

The deer industry sees the *gambler* come into the industry when product prices are high and are then the first to exit the industry when product prices drop. In the deer industry this is contributing to the radical production and price fluctuations. They are not a stable back bone to the industry and cause more harm than good for everyone else associated with the industry. This is usually at their own detriment and good will of the industry.

The Defensive Strategist

The *defensive strategist* typically avoids risk at any costs and has a fear of debt. They do not look outside the square. They are consumed by their own defensive decision making, resulting in a lack of reinvestment of ideas, capital or resources back into the business. They are usually the last people left before the total collapse of an industry or business. Often they are in a position where the assets they own have been inherited. Typically they fill up the non-performing statistics of industry KPIs, and believe that their business is performing as well as could be expected given their own individual circumstances. The older the industry, the more the defensive strategist will become involved, typically through farm succession. Age generally does not greatly alter peoples psychological predisposition, but motivation can as people near retirement, focus on alternative goals or become disillusioned with the industry they are involved in.

An element of this has been creeping into the deer industry lately due to negative or low returns and the focus on alternative profitable industries. This could explain why there are still a small percentage of people exiting the industry as it improves in profitability.

Time Impact

The deer industry provides a classic example of how an industry develops over time and how the four types of personalities interact over time. This is due to how

the industry was formed and the cyclical nature of multiple highs and lows and the relatively short life span compared to other industries. Although it could be applied to sectors of other industries e.g. the expansion of dairy farming into Southland. Figure 4 develops *Insulanders* model further and demonstrates how time could influence the make up of people involved within an industry.

Effect of Time on the makeup of Psychological Predisposition of an Industry

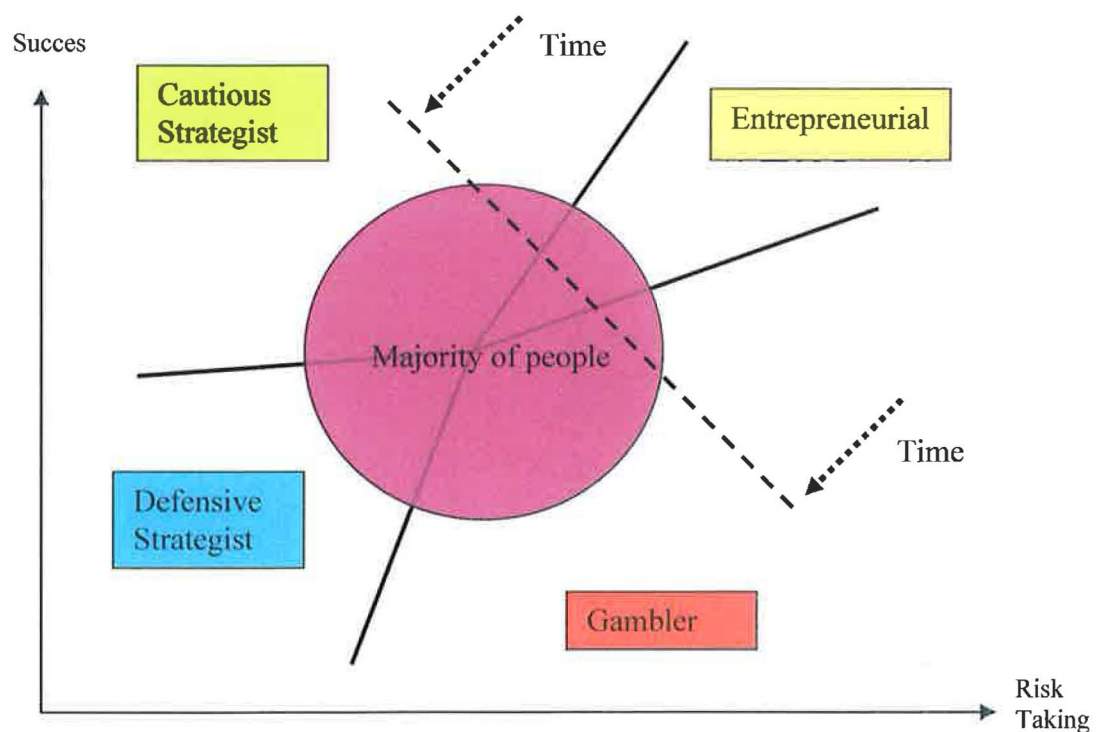
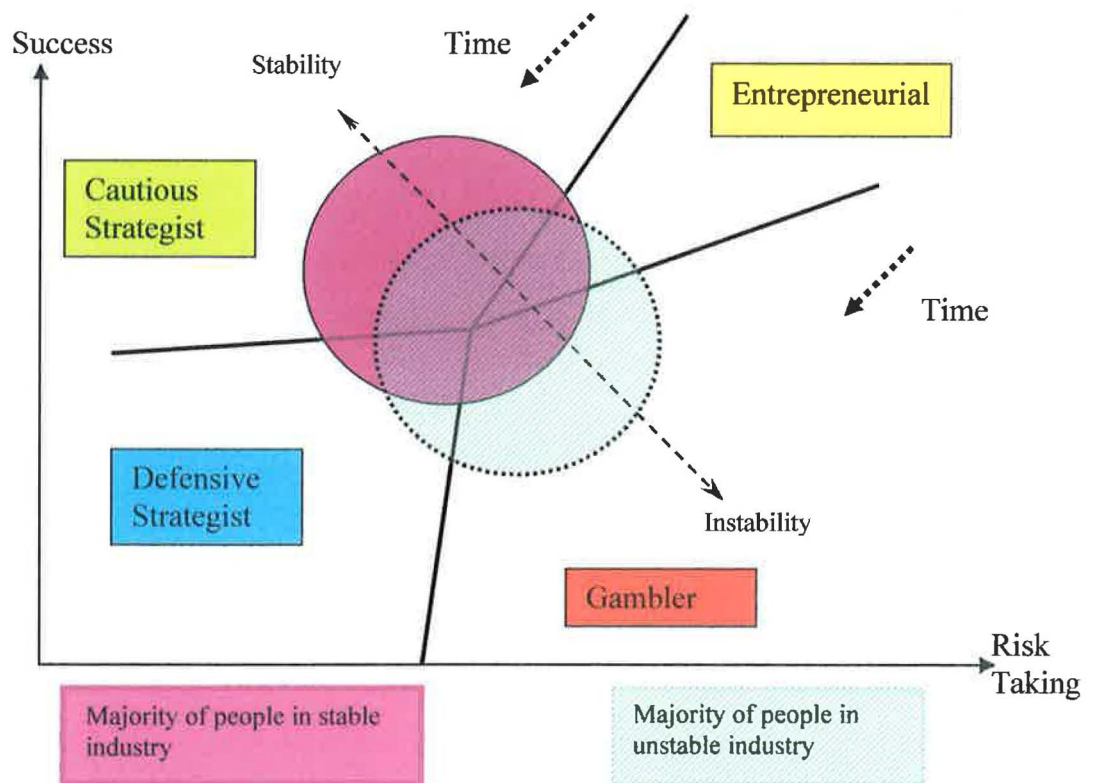


Figure 4, Effect of time on Industry life cycle

As this model explains there is a smaller portion of the total population that is made up of *entrepreneurs* and *defensive strategist*, than *cautious strategist* and *gamblers*. The majority of the population is congregated in the centre of the model, as people don't display the extremes of any one characteristic. The model demonstrates that as an industry or idea is first developed that it is generally *entrepreneurial* type people that enter into the concept initially. They usually make up a greater percentage

of the population. As the concept develops over time and more information becomes available the make up changes, and a lower proportion of *entrepreneurial* people are part of the total population and more people make up the other three types of predispositions.

In a stable, developed and successful industry the majority of people would fit into the *cautious strategist* sector of the model i.e. Figure 5. An industry that is in a situation where there is rapid and unsustainable growth, as seen in the deer industry in the 1999-2001 period, the population mass moves lower and to the right i.e. dotted circle on the conceptual model (Figure 5). This is due to the fact that people are prepared to take higher risks as the perceived returns increase, but they haven't investigated all the relevant information as to why prices have increased, and believe irrationally that the industry is profitable long term based on the initial rush that prompted their first interest.



As product prices drop and the *gamblers* exit the industry the population mass moves higher and to the left and more of the *cautious strategist* make up the population again. These are the people that have faith in a sound industry and are in a position to profit after the exodus of *Gamblers* and the production supply demand curve moves back into balance. The more stable an industry is, the less movement there is of the population mass and it repositions itself higher and to the left of the model.

In industries that have boomed and then failed, of which there has been numerous in New Zealand over the past few decades, the time line moves further to the left and the *defensive strategist* starts to dominate the population. The other three types of people exit the industry as a consequence of them making informative decisions at the right time or due to the fact that the industry is non profitable. Over

the years since deer farming began in New Zealand there has been times when the industry has been vulnerable to this outcome but the information and perception that the products and markets were sound has prevented the industry from dissolving.

In “Figure 4 and Figure 5” The lines separating each sector are not fixed and can rotate in either direction, allowing for change in the makeup in the mass of people. Some industries will be dominated by *gamblers* i.e. share market when it is booming, while other industries will be dominated by *entrepreneurs* i.e. Initial dairy expansion into Southland during the late 1990’s, or the initial deer industry years.

The perception the wider agricultural industry currently has of the deer industry as a whole is that it is relatively risky (boom – bust cycles) and currently not very successful (low returns during 2001-2007). The challenge the deer industry faces is to become less risky (i.e. more stable) and improve its profitability (i.e. more successful), which in turn encourages more people with a *cautious strategist* disposition to become involved in the industry and therefore achieving stability and success.

Relationship between the four types of people involved in the deer industry

The fluctuations of the make up of deer farmers can be best described *Figure 6* where the venison schedule is laid out beside the number of people farming/owning deer. This figure shows that as the deer industry has developed the hypothetical relationships between four personality types involved changes with the perception

that people have of the industry, with returns (venison schedule) having the largest influence. The *entrepreneurial* type personality would initially dominate the industry, (see insert Figure 6, *Initial Industry Makeup*) and this was demonstrated by the original 25 members of the NZDFA, they would have been followed quickly by the *gambler* (city investors looking for taxation rightdowns) who would have seen an opportunity to have a gamble on a yet unproven industry.

As the industry grows and is proven to be viable the *cautious strategist* becomes more prevalent. At the same time the *gambler* also sees opportunities and fuels the peaks and troughs, caused by market fluctuations. The deer industry had few *defensive strategists* in the initial years, but as time progresses their share increases due to the above mentioned reasons, (see definition *defence strategist*). After a prolonged period of low returns from deer, and attractive alternative opportunities enticing the *gambler* elsewhere, the deer industry is being dominated by the *cautious strategist*. But the industry is potentially vulnerable to the *gambler* with venison prices currently increasing dramatically and providing an opportunity for the *gambler* to invest.

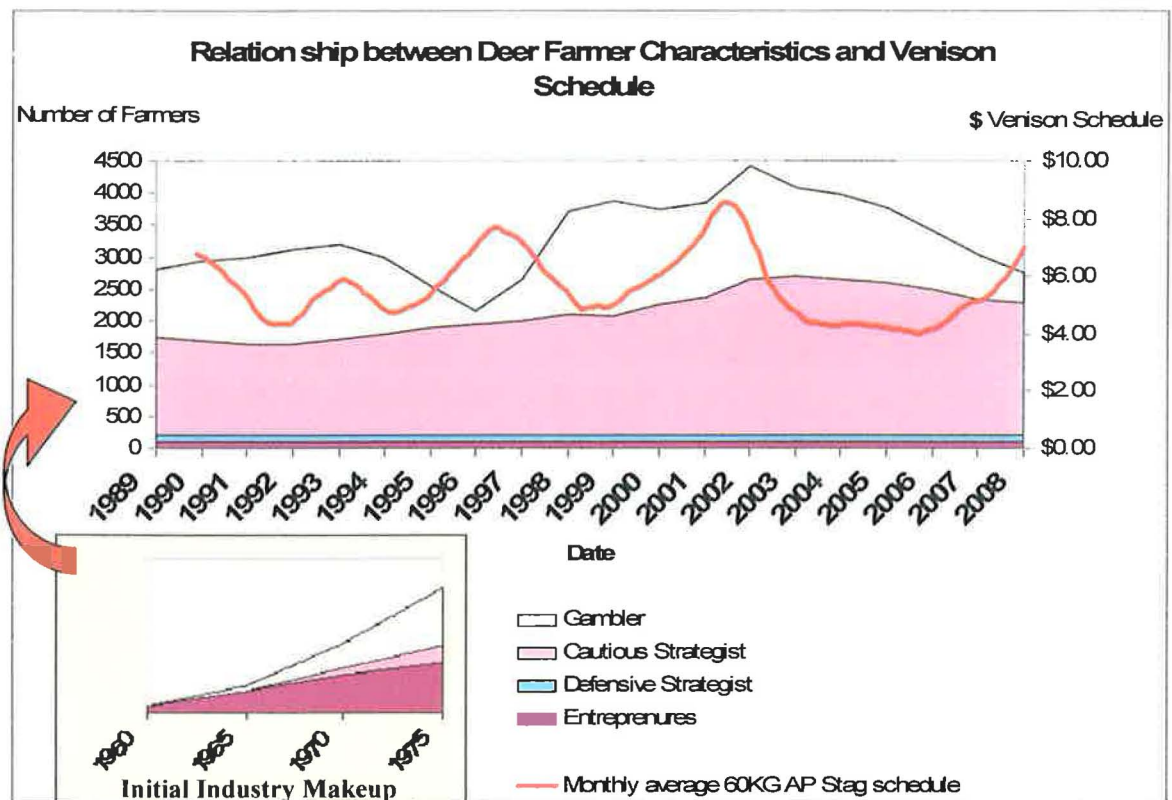


Figure 6, Hypothetical Relationship between Characteristics and Schedule
 Reference Appendix D

As figure 6 demonstrates the role of the *cautious strategist* is vital in the stability of the industry as they don't tend to make rash decisions based on price fluctuations and tend to have a longer term approach to the industry. We don't tend to see a large drop off in the number of *cautious strategists* during times of low product prices and vice versa when product rises rise dramatically they also don't tend to rush into the industry as compared with the *gambler*. This is because they make decisions based on the strength of the information that is available to them, as they understand why the industry is reacting in the manner it is. The *cautious strategist* has the ability to comprehend the available information realize, that the industry is fundamentally strong or weak or being influenced by forces outside of the industry's control and

react accordingly. They also have the ability and confidence in being able to endure periods of low returns with the assumption that the industry will be profitable long term.

Types of people to encourage into the industry

As Figure 6 demonstrates when an industry is in its infancy the type of people that the industry needs to attract are your *entrepreneurs* and some *gamblers*, followed shortly after by the *cautious strategist*. For an industry to succeed and grow over time the proportion of *cautious strategist's* needs to be increased consistently. While an industry has a low critical mass of participants the ratio of *gamblers* has a larger effect on viability as they enter and exit the industry. As an industry obtains a position of size and mass the *gambler* type person doesn't have as large an impact on the industry hence providing more industry stability.

Entrepreneurs

Entrepreneurial type people are vital to any industry as they develop new ideas in marketing, production and direction for industry, however there is only a small percentage of the population that will ever fall into this category. These types of people will generally be followed by the *cautious strategist* and *gamblers*. Most *entrepreneurs* that are attracted to deer farming or the industry will have already become involved. Hence there is not a large population of *entrepreneurs* that can be

attracted to the industry; therefore they will not provide the sustained growth that the industry requires.

Defensive Strategist

The *defensive strategist* is not the type of person that a successful industry should encourage. They are not willing to accept any risk or invest time, money, ideas or energy back into the industry. They generally don't accept the concept of new ideas or technology and will not enhance the industry with their negative outlook.

Gambler

If the industry needs a quick gain in size the *gambler* is the ideal person to target short term. As they are prepared to take high risk and are relatively easy to attract due to their impulsive nature. However they would be quick to exit the deer industry in pursuit of perceived lucrative returns elsewhere if the opportunity arose. The instability that they bring into the industry would only fuel the risk of future boom bust periods. The people in the deer industry most associated with this type personality are the venison finishers, people who have the ability to buy young stock each year when the market looks positive but have the luxury of grazing a different stock species if the deer market doesn't look as attractive.

Cautious Strategist

The deer industry is at the stage where it needs to attract the farmer with the *cautious strategist* personality. They will provide consolidation and the gradual growth that will enhance the perception of the industry to the wider farming community in general, therefore attracting more people to the industry. They also provide the commitment to the industry that will ensure that the industry remains viable with steady growth and strong leadership in the long term.

Velvet producers tend to fall into this category as they are made up of personalities whom are individually successful and moderate risk takers. Even though velvet exports now only make up less than 10% (Appendix C) of total export earnings, they still represent 29% of farmers on Deer Farmer Association committees (Appendix B). In emotional terms, sire sales are dramatically affected in terms of price, even if a buyer is only seeking high body growth rate genetics, if the animal has had its antlers removed pre sale. Deer farmers by nature have an emotional and at times irrational affection for antler, which in many ways describe the difference between the source of venison, and other potentially competing lean red meats. This could be due to history, when velvet producers represented closer to 50% of total exports (Appendix C). Velvet producers spend a long time to breeding up the genetics required to be successful, hence they tend to be committed long term, currently however there is only a limited market for velvet and velvet products restricting the number of specialist velvet producers in the industry.

Hind breeding/finishing systems tend to be lower risk and moderate to successful under good management and returns. These people invest time and capital

into their herds and fit the parameters of the *cautious strategist*, again these people have invested time and money into breeding up their capital stock, making them unwilling to change farming practices often without a good reason.

Attracting the Cautious Strategist

As described previously the *cautious strategists* are articulate in their approach to farming. They like to have a good understanding of the industry from a variety of sources and decisions are not predetermined by dramatic headlines. For these reasons they are the people that are required to provide stability within the deer industry.

The *cautious strategist* needs positive information so that they can make informed decisions on whether to adapt deer as a farming option. The industry must portray a perception of success and profitability and consistently produce sustainable returns. A combined monitor farming approach integrating all species of stock would encourage more than deer farmers along to field days and expose the industry to more people, especially people with the attributes of the *cautious strategist*.

The higher the percentage of farmers in the industry that fit into the *cautious strategist* disposition the more stable the industry becomes, but the industry needs to be stable to attract them in the first instance, (i.e. “what comes first the chicken or the egg” syndrome). Slow to moderate growth of the industry is also required, without attracting large attention grabbing headlines, as this entices the *gambler*. Representation at various agriculture industry functions that attract progressive people is one way of providing the information to the right audience.

Such an attraction strategy might actively advertise the merits of the industry only after the industry has consolidated, provided a record of profitability and low risk and the number of deer farmers has reached a critical mass dominated by the *cautious strategist*. After this point the *Gamblers* don't have as large an impact on the total industry and market fluctuations are not as dramatic.

Key Points of a Cautious Strategist:

1. Successful
2. Competent.
3. Understands risk.
4. Takes low risks economically, environmentally and socially.
5. Generally less highly leveraged.
6. Has the ability to wait through periods of industry cycles.
7. More prevalent latter in life cycle.
8. Agricultural producer, thorough knowledge of the farms resources.
9. Farming is a way of life, motivated to preserve farm for next generation.
10. Plans informally.
11. Uses group discussions.
12. Wide information gathering sources.

Diffusion of Innovations and Technology Adoption Lifecycle

In developing a methodology for encouraging people into the deer industry, a process must be developed that encourages the right people with the right characteristics which enable the industry to be successful and stable over time i.e. the marketing approach. The industry must first determine at which point of its lifecycle it is in and then adapt a marketing/communications plan to achieve the desired results.

“A “*Diffusion of Innovations*” is the process by which an innovation is communicated through certain channels over time among members of a social system” (Everett Rogers, 1963). Basically it theorizes the psychology of the process on how information is accepted and up taken by potential users. E.M Rogers theorized that in most systems the up take of new ideas/technology is split into five categories. Roger’s theory was adapted from work done by J.M Bohlen and G.M Beal in 1957 on the purchase pattern of hybrid seed corn by farmers.

Rogers five stages of adoption follows the classic ‘bell’ distribution curve (Figure 7) suggesting that there are a few people that take up new ideas initially before the majority followed, whom are followed by the laggards.

Everett Rogers Technology Adoption Curve

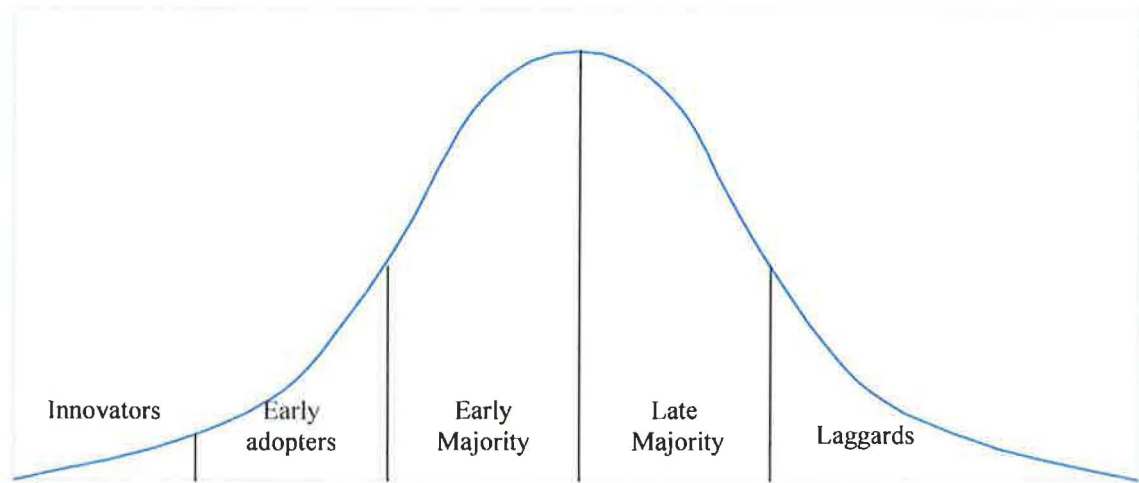


Figure 7, Roger's Technology Adoption Curve

Rogers describes the five types of categories (Not to be confused with the psychological predisposition make up of people. *Entrepreneurs, cautious strategist, defensive strategists and the gambler*) as;

- | | |
|---------------------------|--|
| - Innovators - | 2.5% - Venturesome, educated with multiple information sources; |
| - Early Adaptors - | 13.5% - Social leaders, popular, educated, visionaries; |
| - Early Majority - | 34% - Deliberate, pragmatic, many informal social contacts; |
| - Late Majority - | 34% - Sceptical, traditional, lower socio-economic status; |
| - Laggards - | 16% - Neighbours and friends are main information sources, fear of debt |

This theory is used to describe technology uptake, but could also be adopted to describe the rate farmers have taken up deer farming over time, and does have some very close parallels to the psychological predisposition of people. Within the make up of the *cautious strategist* all of these five categories will exist, however the *innovators* and *early adaptors* will be closer aligned to the *entrepreneurial* sector and the *laggards* will have a closer affiliation with the *defensive strategist*. Figure 8 better explains this;

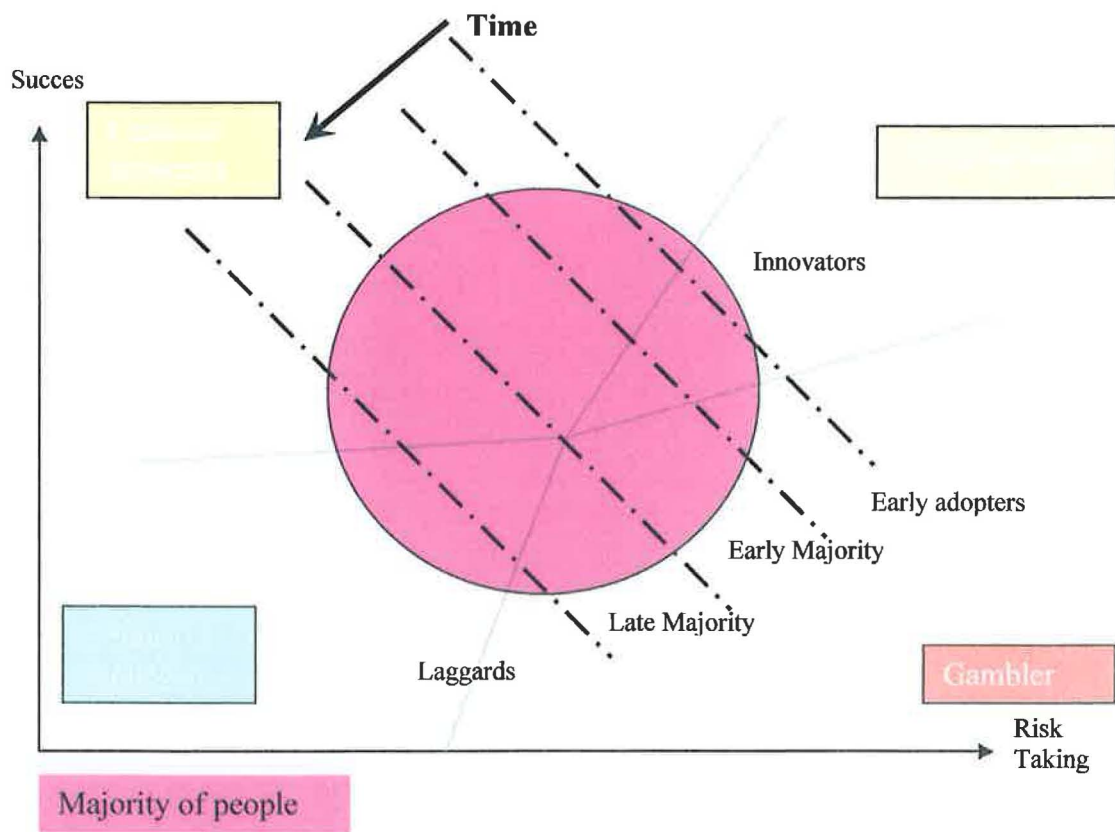


Figure 8; Industry uptake and innovation of diffusion

As surmised by the above figure, in a successful industry the *cautious strategist* dominates the *early* and *late majority*, conversely in an unsuccessful industry the

early and *late majorities* would fall into the *gambler* personality as the majority of people become less successful and take higher risks (Figure 5). Currently the deer industry is probably situated between the *early adaptors* and the *early majority*, as there is still massive potential for the industry to expand over time. However every time the industry expands, it tends to encourage the *gambler* and goes through a boom followed by a bust causing a level of retrenchment within the industry, even though the industry has still been growing over time.

Examining the fundamentals that describe both the *early majority* and the *cautious strategist*, it can be determined that fundamentally they have some very similar attributes. They both are adverse to risk taking and do not make rash decisions. Information is gathered from like minded people and they have many contacts whom to gather information from i.e. discussion groups, focus farms and professional advisors etc. Media is a good way to highlight potential success, but is not necessarily going to make people commit to change without further investigation of the risks involved. Generally these people are already successful and are respected within the community

Crossing the Chasm

Crossing the Chasm is a model developed by Geoffrey Moore and is a modification of Everett Rogers technology adoption curve. According to Moore the marketer (i.e. deer industry) should focus on one group at a time and use each group as a base for marketing to the next group. The most difficult step in the marketing

process is the transition between *early adapters* and the *early majority*, and this is the chasm referred to by Moore (*Wikipedia*). Even though Moore's model focuses on product marketing, there is no reason why it couldn't be adapted to industry marketing, as the desired outcomes are similar.

According to Moore the '*early majority*' would care about the industry they are involved in, and the quality of the product. For example animal welfare, environmental welfare, climate change, food safety and quality, and product attributes etc. Reliability is important (i.e. industry structure, processing reliability) as well as 'vertical' integration building on well formed relationships. They tend to be very loyal to an industry and would even go out of their way to help it succeed. To market to the *early majority* you need to be patient, you need to be visible at the industry conferences and events that they attend (i.e. Field days, ASB Agribusiness Conference etc). Farming magazines, radio, television and the internet need to be running articles promoting the industry, without dramatizing the industry. Over time a strong word of mouth reputation must be earned that provides a sense of achievable growth, industry stability, leaders in quality, welfare and governance.

To '*cross the chasm*' Moore proposes that there is a procedure to be adopted for the marketing of a product or in this case the deer industry;

1 - Target a specific industry niche as your point of attack. This could be economic returns per hectare on class two and three land or the lower labour requirements. Target the land owners/managers operating this type of land. Identify the competition from other land use.

2 - Create a whole industry perception; create a compelling reason to invest in deer farming. This starts from the leadership of DINZ and the DFA and supported by the industry partners i.e. the processing companies, farm consultants, financiers etc. Everybody must be working together with the same objectives for the greater good of the industry.

3 - A strategy must be developed, so as to get a clear message to perspective investors in the industry that reinforces the point of difference between other farming options. Define how people can achieve the desired industry outcome. E.g. encourage farmers to fence a small area of the farm for deer initially. This gives them time to understand the husbandry and low labour inputs required to farm deer, while at the same time not causing a large build up of animals, which shortens the supply of product and fuels another boom/bust scenario. Develop a way to encourage people to learn and understand the industry i.e. Field days, focus farms etc. Keep reinforcing the message that you need to get across, and create a slogan that replicates this message.

4 - Finally market the strategy that has been developed. Make sure the right information goes to the target audience. Make sure positive media articles enforcing the strategy are distributed to the appropriate outlets. (Bankers, farm consultants and the farmers themselves). This strategy works best when it is co-ordinated by a single entity that interacts with the targeted audience. In the deer industry, the entity which would have the best results would be DINZ supported by the DFA and leading agricultural consultants.

The Decision Process

E.M. Rogers also theorized that in adoption of a new system that there is a standard procedure that is followed, *Diffusion of Innovation Model* (Rogers 1995). This model explains how communication interacts with knowledge, persuasion and the decision to reach an outcome.

Figure 9 is a simplified depiction of this model.

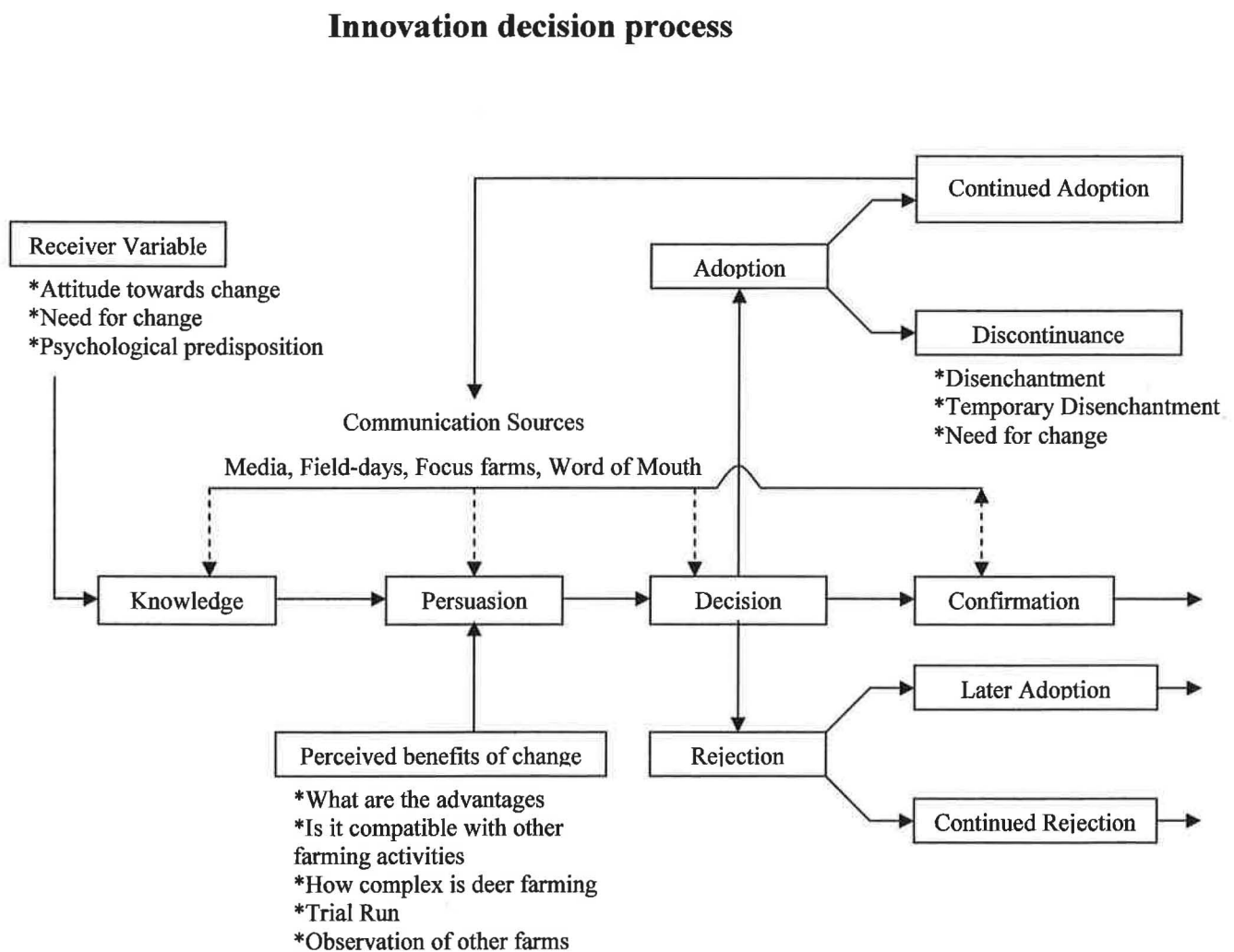


Figure 9; Innovation decision process

In understanding this model, the entity co-ordinating the process of attracting new entrants into deer farming, must first determine whether the target market is ready or in need of a change (Target market being the *early majority* and *cautious strategist*). Currently with low sheep returns on second tier land there is an opportunity for this to happen. There is no point in trying to attract people into the industry if they are not interested in deer farming. People need to be made aware of the deer farming industry and the alternatives that it can provide. Knowledge of how the industry is structured and how it markets its product is important. Knowledge of the capital expense required to start a deer farming operation and a change in the perception that the animal can be difficult to handle need to be made available.

Without the target market receiving the accurate knowledge it is hard to persuade farmers to take up deer farming. If farmers can observe how deer farming is integrated into other operations it is much easier for them to make a decision on whether farming deer is viable in their own particular situation (rejection or acceptance). The people whom make the decision to go deer farming are the best source of knowledge and they need to be encouraged to be part of the communication process. However caution must be raised as people whom have become disenchanted by the industry will also have a negative perspective of the industry, which will/can be part of the communication process.

Linking perception and the Industry Strategy

If we link this model back to the perception that the wider agricultural industry has of deer farming, it can be said that most people are aware of the industry, and like the notion of deer farming, but don't really understand the fundamentals of the industry. People are educated in the healthy attributes of the product especially venison (Velvet is still considered incorrectly by many as an aphrodisiac). Most people believe the information is available if you choose to seek it out. There is still a notion that deer farmers are wild men jumping out of helicopters, and are prepared to



take high risk in return for success. This is not true in today's high performance deer farming systems. People associate the deer industry as being unstable, which it has been, however stable growth can be attained if the right type of people are attracted to

the industry. These are the people whom are risk adverse but successful, committed to their farm and hence their industry, i.e. the *cautious strategist*.

The industry must portray a positive industry based on strong fundamentals associated with leadership and governance. The industry must be patient and not try and convince everybody to become deer farmers at the same time but build momentum slowly, try and avoid the dramatic headlines that will attract the *gambler*. However the knowledge to farm deer successfully must be made easily available, so that any interested person can make a well informed decision on whether to adopt deer farming.

Stability has to be earned by the industry, in other words, to attract the right people, the industry can not afford to gain a reputation of being of a cyclical nature. Presently this is the perception people have of the industry. Generally farmers have relatively short memories and tend to focus on positives rather than the negatives. If the deer industry could prove to be a stable profitable industry over the next five years many of the perceived negatives at the moment would be forgotten.

Conclusion

Even though the deer industry has been through a prolonged period of uneconomical returns, the basic fundamentals of the industry are sound. The industry has a strong leadership team focused on enhancing the industry; however there still remains this perception of an industry which is insecure in its ability to provide long term stability to its producers, processors and ultimately the end consumer of the products. This perception is able to be altered over time if the people with the right characteristics can be encouraged to participate in the industry. Characteristics that conform to success and low risk taking options enhance the stability of an industry thereby encouraging more people of similar characteristics to participate. Patience is a virtue that must be adhered to, to encourage this type of personality, as change will not happen over night. Rapid increases in the deer farmer population, only encourages people willing to take risks leaving the industry vulnerable to instability.

Promotion of the industry must be done in way so as not to attract people with impulsive natures but to also allow industry successes to be available to people who require the information. Once the industry attains a position of stability and a mass of people whom the industry deems as being low risk takers and successful then is the time to promote the industry more emphatically.

The deer industry is in a position with its low base of active deer farmers to be able to shape the characteristics of its industry and provide a stable industry into the future as long as the industry doesn't try to become too large too quickly. The product attributes, especially venison, have all the consumer dietary requirements of a new age world to enable the future success of this fledging but maturing industry.

Appendix A: Farmed Deer Population

Statistics New Zealand, Agricultural Production Census/Survey

Year	Deer Numbers	Industry growth from previous year
1979	42,080	
1980	104,359	148.0%
1981	109,158	4.6%
1982	151,020	38.3%
1983	195,653	29.6%
1984	258,707	32.2%
1985	319,908	23.7%
1986	392,154	22.6%
1987	500,397	27.6%
1988	606,042	21.1%
1989	780,066	28.7%
1990	976,290	25.2%
1991	1,129,503	15.7%
1992	1,135,242	0.5%
1993	1,078,479	-5.0%
1994	1,231,109	14.2%
1995	1,178,704	-4.3%
1996	1,192,138	1.1%
1997	1,300,000 E	9.0%
1998	1,500,000 E	15.4%
1999	1,676,788	11.8%
2000	1,700,000 E	1.4%
2001	1,670,000 E	-1.8%
2002	1,647,938	-1.3%
2003	1,689,444	2.5%
2004	1,756,888	4.0%
2005	1,705,084	-2.9%
2006	1,586,918	-6.9%
2007	1,395,998 P	-12.0%

E; Estimated P; Provisional

Table 1; National Deer Numbers

Appendix B:

Representation on Deer Farmers Committees 2008

Branch	Velvet/Stud Interest	Venison Interest	Farmers on Committee	Non-Farmer committee members	Total On Committee	DFA Members in Branch 2007	Active Farmers 2007
1	2	8	10	4	14	103	219
2	4	8	12	3	15	125	233
3	3	4	7	3	10	338	698
4	1	3	4	0	4	20	37
5	1	3	4	4	8	48	140
6	2	8	10	0	10	142	247
7	5	11	16	3	19	274	615
8	4	8	12	0	12	47	112
8	22	53	75	17	92	997	2301

Table 2; Representation of Deer Farmers on DFA committees

Sample of 8 of 22 Deer Farmer Association Branches in New Zealand representing 62% of DFA members and 62% of active deer farmers.

Representation on Deer Farmers Committees 2008

	Farmer representatives on Committees	Total committee
Velvet Interest as Percentage	29%	24%
Venison Interests as Percentage	71%	58%
Non-Farmer Interest as Percentage		18%

Table 3; Representation of Deer Farmers on DFA committees as a Percentage

Appendix C:

Export Earnings from Deer Products

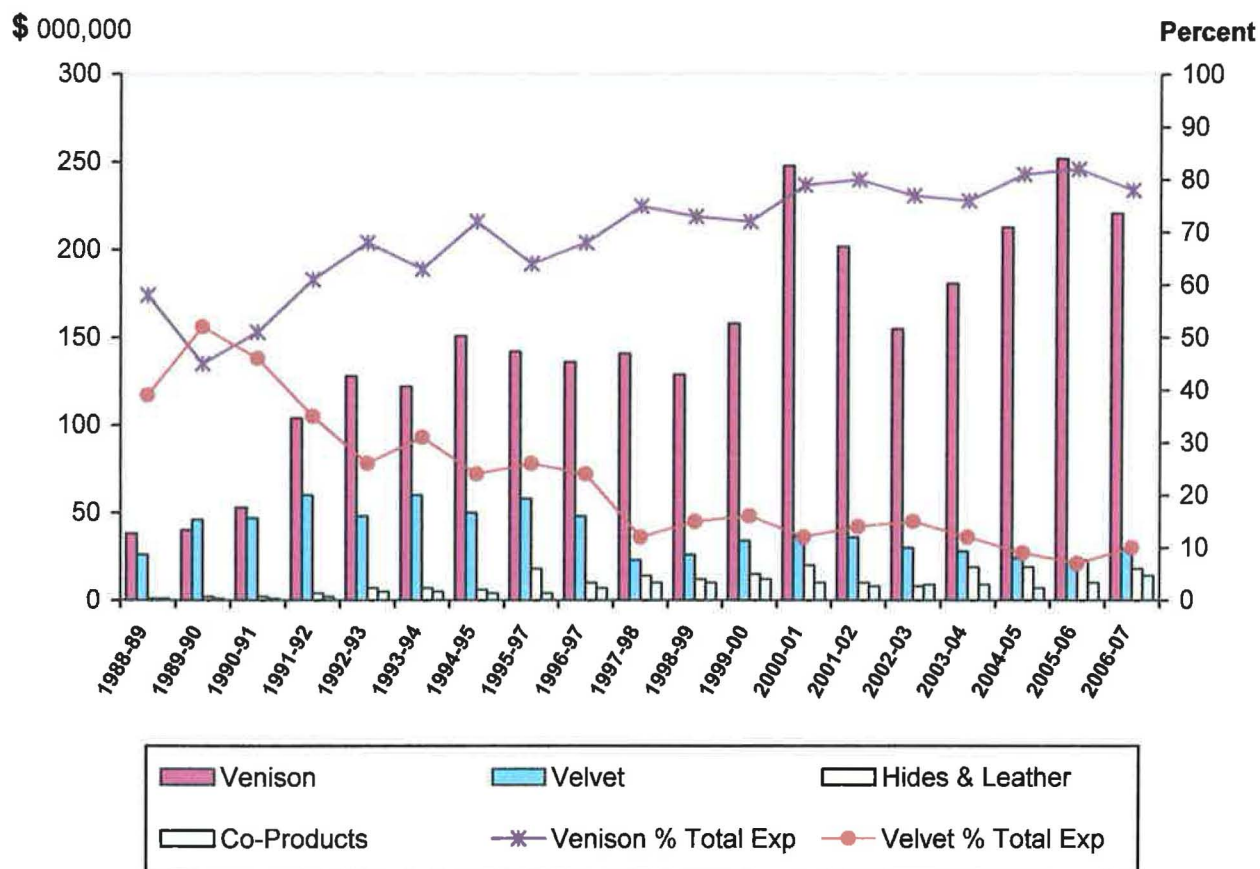


Figure 10, Export Earnings from Deer Products
(Source DINZ Annual Reports)

Appendix D:

Number of Active Deer Farmers

	Total NZ Deer Farms *	Farms with Deer *	Total Number of Farms *	NZDFA Subscription Members	% Active Members @ 55%	% Active Members @ 65%	Assumed Number of Deer Farmers
1989							2,800
1990							2,950
1991							3,000
1992				2,106	3,938	3,332	3,111
1993				2,222	4,040	3,418	3,192
1994				2,080	3,781	3,200	2,987
1995				1,781	3,238	2,740	2,558
1996				1,502	2,730	2,310	2,157
1997				1,853	3,369	2,850	2,662
1998				2,583	4,696	3,973	3,710
1999				2,493	4,532	3,835	3,580
2000				2,835	5,145	4,361	3,750
2001				2,682	4,876	4,126	3,854
2002	2,277	2,138	4,415	3,119	5,670	4,798	4,415
2003	2,087	1,989	4,076	2,749	4,507 ^a	3,813	4,076
2004	1,741	2,239	3,980	2,885	3,245 ^b	4,418	3,980
2005	1,618	2,150	3,768	2,836	3,156 ^b	4,363	3,768
2006	1,537	1,860	3,397	2,256	4,101	3,470	3,397
2007	1,480	1,574	3,054	2,088	3,796	3,213	3,054
2008				1,922	3,495	2,956	2,761

Table 4; Active Number of Deer Farmers

* Source: Statistics New Zealand Agricultural Production Survey.

Number of Farms are as at 30th June of Survey Year.

2002 and 2007 Were Agricultural Census Years which include all farms with GST registration. In each of the other years farms without GST registration were outside the APS population.

Given the demanding requirements of deer farming, the number of deer farms without GST registration will be small.

That the “deer farms” count is of farms with a Deer Farming ANZSIC96 classification A015300. “Farms with Deer” are farms with a classification of other than A015300 but which has at 30th June of the reference year had one or more deer animals.

Source; New Zealand Deer Farmers Association (NZDFA) membership year end March.

Changes in the structure of the NZDFA have occurred during this period, therefore membership will not accurately relate to the number of actual Deer Farmers.

^a Estimated to be low by 200 members.

^b Estimated to be high by 500 members.

The statistics for this table are very difficult to attain and the author has assumed the number of actual farmers based on Statistics New Zealand figures and DFA membership. In relevance to *figure 6* the objective of the graph was to demonstrate the relationship between venison schedule and total deer farmers.

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