Kellogg Rural Leadership Course Project

TUBERCULOSIS

ISSUES

IN

NORTH CANTERBURY

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Executive Summary

Farming with the tuberculosis (TB) in the endemic area of North Canterbury has major implications to management practices. Although industry sectors are structured differently, the impact of TB is similar across the board with stress, financial, and farm policy implications all significant factors. The co-ordination and commitment of pest control in an organised, monitored and decisive fashion is necessary to see downward pressure on the numbers of TB reactive livestock in the region. A positive and effective chain of communication from the Animal Health Board, through Regional Animal Health Committees, Regional Councils, MAF Quality Management, to farmers is essential to foster successful results in the field. This, in turn, will enhance future education and research into winning the battle against TB and securing overseas trade access for our produce.

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1. OBJECTIVES

- To highlight the current issues present in tuberculosis management in North Canterbury that affect the business of farmers in the region.

- To identify areas where emphasis should be focused in order to achieve a faster eradication of tuberculosis.

- To illustrate the tuberculosis situation covering issues from a farmers perspective.

2. INTRODUCTION

The aim of this project is to illustrate key issues in the Tuberculosis (TB) management, with particular reference to the Amuri Area of the North Canterbury region. To illustrate the interrelationship between

- the impact of TB control issues have on farmers and
- the impact farmers have on TB control measures

The 1995 National Pest Management Strategy for bovine TB states that their aim is to reduce infected herds in TB vector free areas from 0.7% to 0.2% of total livestock numbers.

The internationally accepted standard is not more than 0.2% of herds on Movement Control currently New Zealand has 2.4%.

We firstly need a brief overview of the impact TB has on New Zealand agriculture.

3. BACKGROUND

Bovine Tuberculosis is an ancient disease of farmed cattle. It has also been found in farmed deer since 1978. In New Zealand the disease has also been identified in goats, sheep, pigs, cats, dogs, ferrets, stoats, possums, hares, rabbits and hedgehogs.

Historically the disease has been a significant human health problem.

The actual or potential negative impacts of the disease are threefold

i) on human health
ii) on health and productivity of farmed cattle and deer herds
iii) potentially on New Zealand export trade in beef, dairy and venison products.

3.1. Human Health

Humans are able to contract the disease by consumption of unpasteurised milk or by direct contact with infected animals or carcasses. Currently

pasteurisation of milk, sound slaughter house inspection practice and a reasonably low overall incidence of the disease in livestock greatly reduces the risks to human health from bovine TB.

Human cases of the disease in recent times have mostly been among people who work closely with infected animals or carcasses. However any major relaxation of tuberculosis control in livestock compared with the status quo would increase the exposure of certain groups in the community to the disease especially farmers, dairy and slaughter house workers.

A wider adverse public reaction to the consumption of beef, venison and dairy products may also result from a failure to control the disease effectively at its sources. The idea that basic food stuffs maybe contaminated with a serious infectious disease can cause distress to the community.

3.2. Tuberculosis in Cattle and Deer

Tuberculosis in cattle and deer is a lingering, chronic disease which is usually fatal, thus the disease can clearly have adverse effects on herd productivity. Under current practice, the disease is generally detected and removed from herds at an early stage. Therefore the major losses in production are associated with disease control measures, which require disruption of farming practices and the slaughter of infected animals or suspected cases.

3.3. Potential Impact on New Zealand Export

The most serious aspect of the disease is the potential loss of overseas trade in cattle and deer products. Levels of bovine TB infection in New Zealand livestock are high by international standards. Consequently, there is a risk that overseas consumers will perceive New Zealand products to be inferior to those from suppliers with much lower levels of the disease. In the post GATT trading environment New Zealand's international marketplace competitors may well choose to exploit this to their advantage. New Zealand's competitive position as a supplier of high quality beef, venison and dairy products may suffer with consequent risks to an export trade which is worth approximately $5 billion per annum.

Australia has already reacted to New Zealand's relatively high incidence of bovine TB by banning the import of live cattle from New Zealand.

One of the major reasons for the high incidence of bovine TB in New Zealand livestock is the prevalence of the disease in wild animal populations which act as TB vectors. Wild populations of the introduced Australian brush tail possum and several species of deer are known vectors for the disease, while suspected vectors include ferrets and wild pigs. This makes control of the disease in New Zealand a protracted and costly process. Not only must New Zealand maintain a traditional programme of

herd testing, slaughter of infected livestock and control of movement of animals from infected herds but it must also control infected vectors populations. Control of vector populations, especially possum populations, will have beneficial environmental impact.

4. DAIRY

Dairy herds are arguably the most vulnerable class of livestock to the TB outbreak in the region. The reason for this is the structure of farming entities and management practices that have evolved with the influx of dairying to the Culverden Basin over the past 10 years.

4.1. Management

The majority of dairy units are managed as "milking platforms", where milking cow stocking rate is maximised and all young stock and dry cows are grazed off the milking unit, this can also include up to 100% of the herd grazed off the farm for 60 - 100 days over the winter months. We can see from this practice (largely economically driven) that a large number of stock movements take place each year.[1]

Taking note that TB regulations require all cattle and deer over three months of age to be TB tested during the 60 days prior to movement puts a huge demand on testing services and a large burden on farmers when planning off farm grazing management. This has a particularly annoying impact when organising spot or short term grazing arrangements during times of acute feed shortfalls, due to the, at times, harsh and unsympathetic climatic conditions. Add to this the possibility of up to 14 days to get your livestock premovement tested and 4 more days until results are known, leads to an almost 3 week delay to get stock to off farm grazing when the opportunity/necessity arises. The only movement off farm where a test is not necessary is where stock go directly to slaughter.

4.2. Tenure

The type of tenure on a significant portion of Amuri Basin Dairy farms puts a specific group of farmers at more significant risk - that of the 50:50 (herd owning) sharemilker. These farmers own all livestock and plant and are contracted to the farm for terms ranging from 1 to 5 years (commonly 3 years). Up to 90% of a 50:50 sharemilkers assets are tied up in livestock, usually in the region of $500,000 to $1,000,000 (Culverden has the largest average herd size in New Zealand)[2]

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[1] *see appendix for actual movement records of our farm from one year to the next Source: MAF Quality Management (Rangiora)*

[2] *L.I.C Annual Survey*

The vulnerability of the sharemilker becomes acute when nearing the end of a contract and preparing to shift all his/her herd to a new position. If TB reactors are found at the premovement test, chaos can arise. The new landowner where the sharemilker is about to move to may make it a contractual condition for a TB free herd to move onto his/her property. This necessitates retests or provision to shift part of the herd and cull offending livestock in order to eliminate offending animals. An even worse scenario is the case of a herd sale at the end of a contract where the sharemilker has sold cows and then had positive reactors at final premovement test. This can have the effect of drastically discounting the herds value and minimising the options available to the sharemilker for disposing of the herd.

4.3. Psychological Impact

The psychological stress this situation can cause the sharemilkers is acute, particularly if they have purchased a farm of their own and consequently had their equity eroded as the result of a TB outbreak being identified in the herd.

The social stigma attached to owning a herd that has TB is likened to having "AIDS" in the rural community where tradition and custom can be harsh on farming families. The irony being that a TB outbreak, that is not easily identified, can occur through no fault of the farmer concerned.

4.4. Financial Impacts

A significant cost in time and money is incurred by dairy farms in meeting testing schedules. In particular in the November period the round of annual whole herd tests are conducted to obtain fresh data after calving has finished and while stock movements between farms is at a minimum. However, a down side of annual testing at this time of year for dairy herds is the interruption to milk production from standing cows off feed and yarding them for testing, in almost all cases, between milkings. This practice can have a large negative impact on the days milk yield at a time of near peak daily production. Also with the mating programme well under way the negative impact on milk production can be compounded by having many cows cycle on TB test day.

5. BEEF

Beef herds are also very vulnerable to outbreaks of TB however the consequences have a variable impact depending on the type of stock policy on individual farms.

5.1. Beef Finishing

Finishing farms situated on the down lands or irrigated plains whose main market is the meat works, are those farmers who will be least affected by TB apart from the cost of losing carcasses that are condemned at slaughter. Compensations will be paid at 65% of fair market value for these.

Beef farmers are also vulnerable when shifting stock to off farm grazing, this is not however a common management practice, so the risk is minimal.

5.2. Weaner Production

Beef farmers who produce weaner cattle for sale annually are at a high risk of TB outbreaks in their herds causing financial stresses through reduced returns. The weaner market can be discounting white tag livestock by an average of $50 per animal, giving an outbreak of TB prior to weaner sale time, perilous consequences.

5.3. Stud Breeders

Bull breeders who generate a large proportion of income from sales of stud breeding bulls are at very high risk from TB outbreaks occurring. A breeder could loose his entire market if placed on movement control should TB be identified in his/her herd.

Geographically some changes in location have been evidenced with some breeders relocating their breeding enterprises to areas outside of North Canterbury's endemic area. Also some farms have relocated to areas within the Amuri Area away from the northern fringes where TB outbreaks are more rife.

5.4. Policies

A number of farms in the region have changed their stock policy from purely breeding units to become finishing farms, however this is largely dependant upon the class of land the farm is situated on. Many high country cattle units are unable to finish any beef animals and have no option to change farming policy to that end.

6. DEER

The deer industry is the last of our three livestock enterprises to be covered, it has some unique features compared to beef and dairy operations.

6.1. Management

Deer herds are found to have TB positive animals usually go direct to slaughter rather than wait for a retest. This has proved to minimise spread of the disease. High risk herds may move direct to slaughter only.

There are two main deer farming systems as in beef industry - breeding and finishing with some units having a combination of the two. As the end product is venison (cervena) all animals produced will inevitably end up at slaughter so TB infected animals are better identified than in the dairy or beef herds where milking and breeding stock are retained for longer periods.

A lower incidence of TB is evident in deer herds when compared to beef or dairy herds. This is due to more stringent controls on movement of stock leading to a tighter culling regime.

7. INCIDENCE OF TUBERCULOSIS IN THE AREA

As a dairy farmer shifting to the Amuri Basin Area of North Canterbury, we found that certain stigma was attached to us. As dairy farmers it was considered we were responsible for the spread of TB in the region. This reasoning was due to the fact that we shifted stock around so often for grazing and from district to district as sharemilkers to pursue new opportunities and larger sharemilker contracts with bigger herds thus increasing the possibility of transmitting TB.

Some recent and up to date data helps disprove this myth as provided by MAF Quality Management Rangiora.

- As at the end of September 1997 in North Canterbury there were 80 cattle herds with TB restricted under movement control. Of these dairy and beef herds, 7 were dairy herds with one of these situated south of the Amuri Basin but North of Waimakariri river. This leaves 73 beef herds on movement control. There were 30 deer herds in North Canterbury on movement control at that time. In the previous twelve months 280,000 cattle and deer were tested in the region from Rakaia (South) to Conway River (North). 300 animals were reactive to the testing and were subsequently slaughtered.

8. CONTROL OF WILD ANIMALS

The effective control of pest vectors in the region is of major importance in limiting the spread of TB.

8.1. Species

The two most important animals are the possum and the ferret. Without ferals targeted all livestock testing efforts will be in vain as infected feral vectors reinfect livestock after a clear TB status has been achieved.

This is an area where individual farmers can have a major impact on control of TB through eradicating these pests. Methods include: trapping, poisoning and shooting.

8.2. Eradication

A degree of organisation is required to achieve saturation of eradication to gain an effective kill. To this end Locally Initiated Programmes (LIPs) are being set up by the Animal Health Board through the local Regional Animal Health Committees (RAHC). Groups of 15-20 farmers join forces to achieve a high degree of control in eradicating ferals, in an organised fashion.

Some funding is available from the Animal Health Board upon submitting a plan and monitoring procedure to the board for approval. This approval is subject to the programme complimenting the achievements of regional TB control objectives.

8.3. Organisation

One of the major drawbacks of the L.I.Ps being effective, is farmer apathy. Until many farmers have experienced TB first hand they do not realise how fickle the situation is farming in an endemic area. This makes setting up a network of farmer groups to saturate vector (pest) control efforts hard to achieve. More effort is needed here to communicate and educate farmers on the importance of TB control measures and how pest eradication is a vital link here.

8.4. Monitoring

An important part of vector control is monitoring the TB status of pests being killed. Autopsies are carried out by MAF Quality Management to ascertain the incidence of disease in vector populations.

Historically possums have shown 0.5% incidence, ferrets have shown 10% incidence.

An adequate sample per farm is 20 animals for testing per species per year.

The incidence of TB in the feral populations can lead to no incidence in livestock however this information will be useful in organising pest destruction planning.

9. RESEARCH

Research into feral population and their habitat is in its infancy with particular reference to ferrets in the North Canterbury. The ferret is an elusive animal, nocturnal in its behaviour and thought largely to be a major vector in the spread of TB in this region. Several research projects and surveys are currently underway to ascertain details on their movements and behaviour, feed sources, poison susceptibility and other features of their habitat. Landcare Research and MAF Quality Management are undertaking studies for the Animal Health Board to obtain more accurate information about these small animals that are thought to be such large players in the spread of TB.

One such study was carried out on several properties including our own at Mouse Point, Culverden from July 1996 through to June 1997. Ferrets were captured, tagged and released then recaptured to determine the direction and distance that they had moved from their original capture site. Radio transmitting collars were also used to accurately track the ferrets. Most ferrets stayed within a 3 kilometre radius of their capture site but 11 animals moved further with one travelling 15 kilometres from Mouse Point on the Waiau river to the edge of the Balmoral forest at the southern end

of the Culverden Basin. They also proved to be fully able to cross large rivers, travelling over the Waiau riverbed some 2 kilometres of channels and riverbed. Also one ferret left its river side habitat and travelled approximately 10 kilometres up into steep hill country to the west.

10. SUMMARY

- Farming in the region under TB movement control in a TB endemic area has major implications to the business decision and management practices of the farmers concerned.

- The structure of the dairy industry leaves certain players more vulnerable to effects of TB outbreaks than other farmers.

- Sharemilkers are particularly at risk in terms of movement restrictions and contractual obligations affecting herd values and total equity should a TB outbreak occur.

- Contracts need to be changed to allow sharemilkers dairy herds to remain on a farm owners property.

- There is room for changes in farming policies to lower stocking rates and minimise off farm grazing to reduce risks of infection outbreaks.

- The scheduling and timing of testing needs fine tuning to avoid periods of peak production to the costly interruption to milk production during the height of the mating season.

- The stress levels associated with awaiting test results and contending with herds placed under movement control are significant and need addressing further in terms of education and communication.

- All livestock farmers are vulnerable to TB with some unable to change farming policies to minimise the impact of an outbreak occurring.

  Breeding units on harsh country who are unable to finish their own stock for slaughter face significant reduction in sale prices for store stock.

  Those farmers who are prepared to shift their farming operation to another district outside an endemic area to minimise TB risks have made a huge conscious decision creating sometimes large social upheaval for themselves and their families.

  Those farmers making a complete change in farming policy in an effort to reduce risk need to upskill and retrain their management to apply new management practices to make the changes economically viable.

- Deer farmers who have the most streamlined farming operations in terms of livestock movements, are the least affected. This however does not include breeding enterprises who have the same risks when selling on to finishing farmers.

- The co-ordination and commitment to vector control in endemic areas is vital to the continuing success of forcing TB infected livestock numbers down over time. Farmers must not underestimate this role and its importance to their farming business.

- Continuing education and communication at farmer level is vital to maintain pressure on minimising TB infections.

- Monitoring grazing blocks, Declaration Cards, feral numbers, TB status and presenting all livestock for regular testing will enhance chances of reducing TB incidence.

11. REFERENCES

Animal Health Board - National TB Strategy Nov 1995
- Annual Report 30 June 1996

Canterbury Regional Health Committee
- Regional TB Operation Plan July 1997 - June 2002

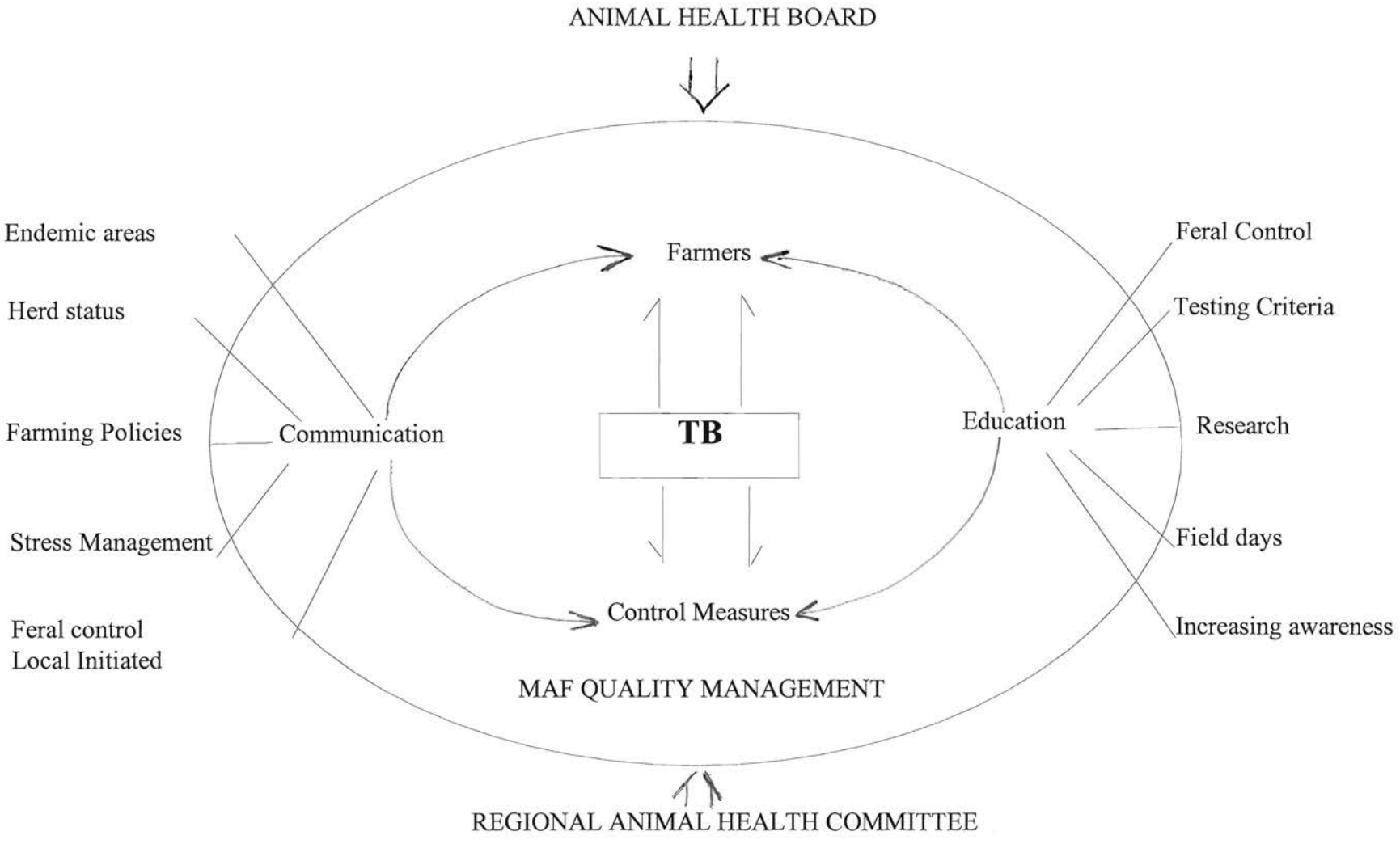
Spurr E B, Ogilvie S C, Eason C T, Morse C W, Young J- July 1997
- A poison bating strategy for effective ferret control
- Landcare Research

MAF Quality Management Rangiora
- Tuberculosis: Information Report on the Disease in Cattle in New Zealand.

12. APPENDICES

1. Relationship Flowchart.
2. Movement Control Policy - Schematic layout.
3. Herd History - an example
4. Glossary of Terms - Canterbury R.T.O.P.
5. " cont.
6. Functions & Responsibilities
7. Management Relationships

Relationship Flowchart



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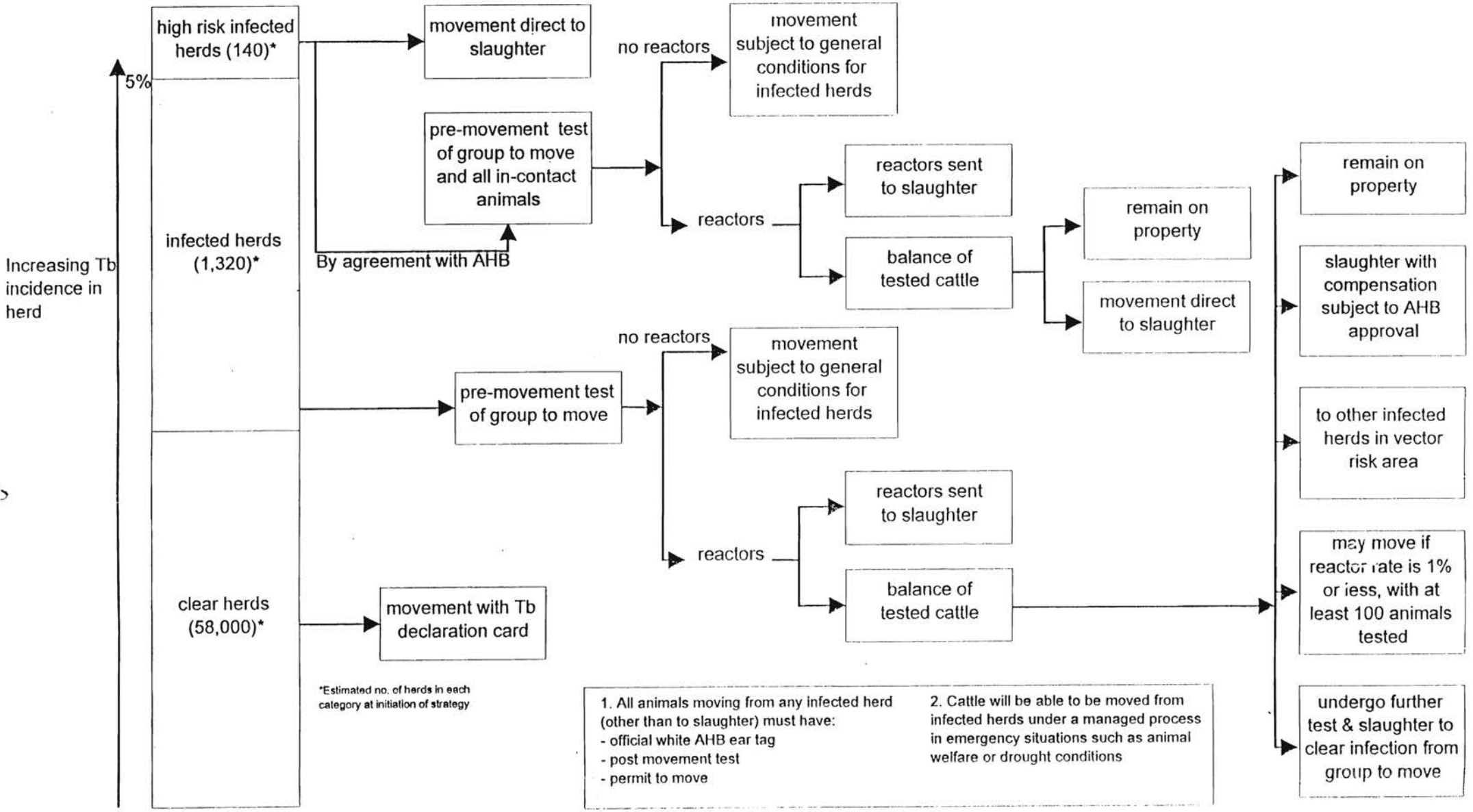
Schematic representation of Movement Control Policy for cattle



Herd History of Bovine Tuberculosis

In Herd 230-9233

Owner : Walker, JL & LM
Address : Caithness, RD, Culverden
Phone : (03) 315-8915

Current Herd
Species : Cattle
Herd type : Dairy Herd
Test Programme : 1 yr
Last Transition : 31-March-1995
Comment : CHECK FOR DEER
Road Location : Caithness Rd

Vet District : Rangiora
District : Hurunui
Farm Id: HU-03016
Lo Area Id: 45 Rangiora 45
RAHC : Canterbury
Factory No. : N/A-841
Directions : Dairy shed, Mouse Point, Culverden. 36 aside herringbone.

Area Class : VC Vector Control
Control Zone : 6 Clarence-Waiau
On Area Movement Control Since 01 May 1993

Whole Herd Test episode (Caudal Fold (Standard)) is due on 08 May 1998

Test Date	Test Group	Episode Type	Test Type	Examined	Positive	Suspicious	Status	MC?
08-May-1997	10	Whole Herd Test	Caudal Fold (Standard)	428	0		Clear 3	N
24-Apr-1997	9	Miscellaneous Test	Caudal Fold (Standard)	51	0		Clear 2	N
10-Apr-1997	8	Miscellaneous Test	Caudal Fold (Standard)	11	0		Clear 2	N
20-Feb-1997	7	Miscellaneous Test	Caudal Fold (Standard)	87	0		Clear 2	N
07-Nov-1996	5	Ancillary Tests	Comparative Cervical	11	0		Clear 2	N
16-Aug-1996	6	Miscellaneous Test	Caudal Fold (Standard)	3	0		Suspended	N
18-Jul-1996	5	Final Part Herd test	Caudal Fold (Standard)	178	11		Suspended	N
26-Apr-1996	4	Part Herd Test	Caudal Fold (Standard)	223	0		Clear 1	N
15-Dec-1995	3	Ancillary Tests	Comparative Cervical	1	0		Clear 1	N
14-Dec-1995	3	Whole Herd Test	Caudal Fold	200	1		Clear 1	N
11-Aug-1995	2	Miscellaneous Test	Caudal Fold	150	0		Clear 1	N
31-Mar-1995	1	Veterinary Direction	No Test				Clear 1	N

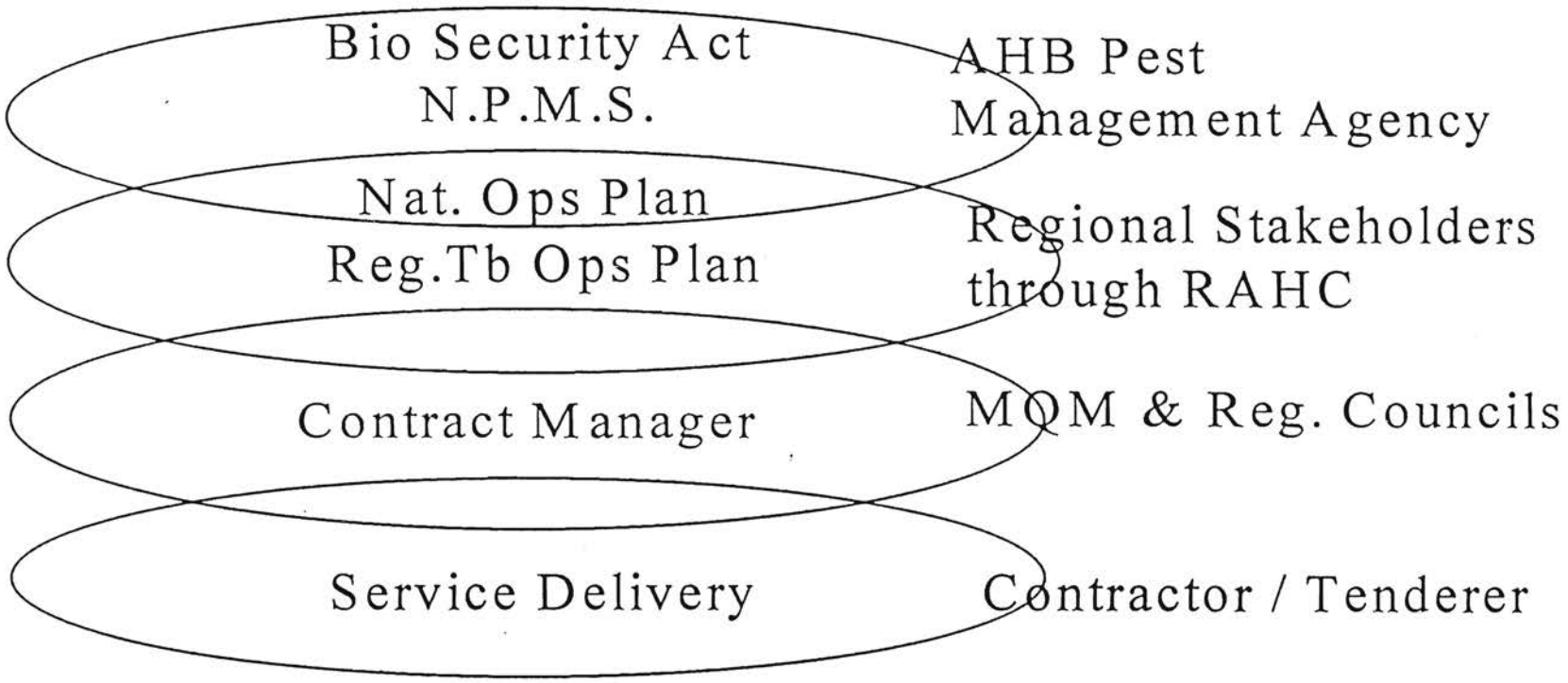
*** *End Of Herd History* ***

4.5 Glossary of Terms

BLIP	Control designed to prevent establishment of Tb in wild animal populations in a surveillance area
Buffer	The area surrounding a Vector Risk Area where control is undertaken to prevent the spread of Tb to surrounding Vector Free Areas
Casing	The documentation of any herd which is not presently on the database
Herd Status	Indicator of whether a herd is free of Tb (C^n) or infected with Tb (I^n)
Pre-movement testing	A compulsory requirement for all cattle and deer within a Declared Movement Control Area (DMCA).
Locally Initiated Programme (LIP) - See Section 3.3.	AHB will provide a measure of support for agreed on-farm vector control programmes. General Criteria for LIPs are clear evidence of commitment and agreement to funding by a local group of landowners, an agreed vector control programme with AHB which will complement the achievements of regional Tb control objectives, and the programme is supported by the Board's regional vector control agent and / or Regional Co-ordinator
Regional Initiative (or Regional Vector Control) Programme (RIPs).	Vector control programmes within the VRA with emphasis on the vector control results as specified by the Animal Health Board
RAHC	Regional Animal Health Committee - See Section 4 for details
RTOP	Regional Tb Operational Plan - A statement of how objectives for reduction/eradication of Tb will be achieved within a region
M/C	Movement Control
MQM	MAF Quality Management
NPMS	National Pest Management Strategy
Feral Animal	Domestic animal that have 'gone' wild i.e. feral cattle and feral sheep.
Wild Animal	Possum and ferret

Fringe Testing Zone	This is a zone surrounding a VRA where at least annual testing will be undertaken on all eligible cattle and deer as a means of monitoring any outward spread of Tb vectors. The zone should be sufficiently wide such that there is a low probability of Tb vectors migrating through the zone undetected.
Surveillance Testing Zone	Area within a Vector Free Area that is not otherwise classified as a Fringe Testing Zone or an Officially Tb Free Area
Tb Vector Free Area (VFA)	Defined area declared by the Animal Health Board to be free of Tb disease in wild animals
Tb Vector Risk Area (VRA)	Defined area declared by the Animal Health Board where Tb has been identified in wild animal populations or suspected on epidemiological grounds, and are considered to be the source of infection for adjacent cattle and deer herds
Declared Movement Controlled Area (DMCA)	The purpose of the DMCA is to minimize the risk of Tb infected cattle and deer moving from 'high risk' VRAs, ie., those VRAs where the risk of infection in cattle and deer is considered too high to allow cattle and deer to move out without first passing a pre-movement test.
Tb Declaration Card	Information card which assists purchasers of deer and cattle to assess the risk a group of animals may pose to existing herds. Cards must accompany all animals which move from their herd of origin
Tb Foci	Discreet location where the presence of Tb in possum populations is high
Vector	Wild animal which harbours Tb and which can infect farmed cattle and deer
Vector Control	Measures undertaken to control the spread of disease within and between wild animals, and from wild animals to farmed cattle and deer
Vector Eradication	A programme undertaken to eliminate Tb from the vector population to ensure that the disease is not established in either wild or domestic animals.

Functions and Responsibilities



Responsibilities / Communication Overview