

Review of the Animal Health Board's five year strategy

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Summary

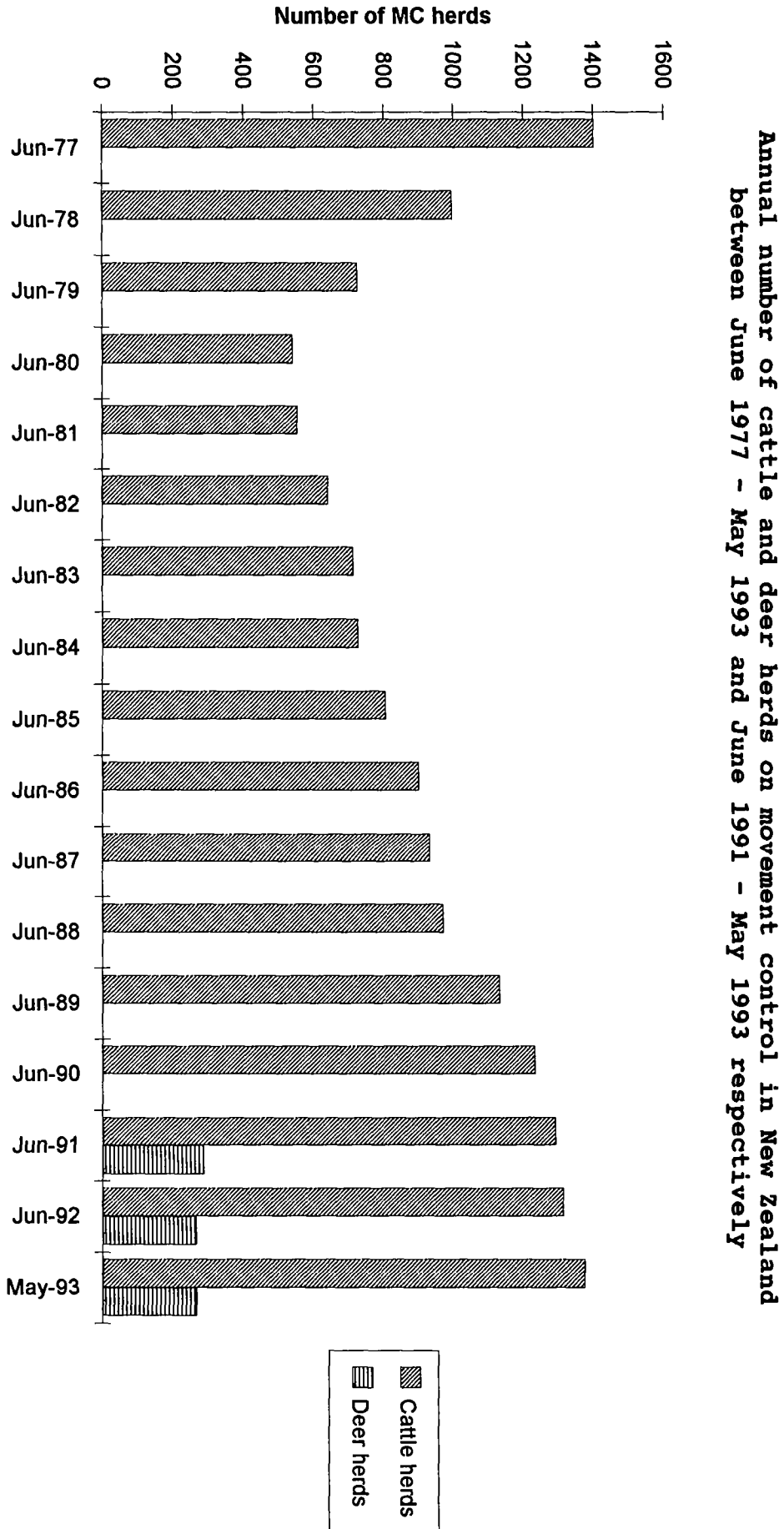
The trend for number of cattle herds under Tb movement control restrictions and number of Tb reactors continues to increase, especially in the South Island. Number of deer herds under movement control has remained relatively constant for the last 2 years. Most cattle and deer herds under movement control restrictions came from areas where Tb is considered endemic in the feral/wild animal populations. The Animal Health Board, who administers the Tb scheme, has developed a 5 year strategy for the control of Tb. This strategy focuses on: a) reducing the spread of infection from feral/wild animals to cattle and farmed deer by increasing the extent and intensity of feral/wild animal control in defined areas; and b) reducing the spread of infection that occurs through the movement of infected cattle and deer by the implementation of a number of pre-movement testing policies. The strategy also emphasises the importance of farmers taking more responsibility for their Tb situation.

Current New Zealand Tb situation

During 1992/93 the number of cattle herds on movement control continued to increase and now numbers 1,376 compared with 1,313 in June 1992. Number of cattle reactors for 1992/93 are predicted to exceed 6,000 compared with 5,937 in 1991/92. Deer herds on movement control have remained relatively constant at around 260, but number of reactors are predicted to exceed 2,000 in 1992/93, compared with 1,700 in 1991/92. Tb feral/wild animals, especially possums (*Trichosurus vulpecula*), are considered the major source of infection for cattle^{1,2,3,4}, but less so for deer.

The trend for herds under movement control restrictions is shown in Figure 1. The changes observed for cattle herds on MC is largely associated with consolidation and expansion of endemic areas, the testing regime and the amount of money expended on possum control. Some of the increase observed in the last 11 months has been associated with the introduction of the Animal Health Board's Area Movement Control policy. Most of the increase though appears to be associated with both the expansion and consolidation of feral/wild animal infection in the endemic areas, especially in the South Island. As a result, the proportionate allocation of funds for possum control in the South Island has doubled from 13% in 1989/90 to 27% in 1992/93. Feral/wild animal control in the South Island is expensive, due to the extensive areas that require control relative to herd size and number of cattle (South Island contains 15% of New Zealand cattle). Figure 1 also indicates the "snowball" effect that spread and consolidation within largely endemic areas has. It takes time to identify an expanding or consolidating feral/wild animal problem, especially where there are few or no cattle indicators. The size of the proposed operation then needs to be defined, planned (to meet both farmer and control needs), and gain funding approval. In the meantime the infected area has developed its own momentum, continuing to expand and consolidate. Thus by the time control is implemented, the problem is larger than first

Figure 1.



envisaged and more difficult to manage.

Management of Tuberculosis in New Zealand

Possoms and other feral/wild animals (pigs⁵, deer, cats, stoats and ferrets^{6,7}) have been found infected with *Mycobacterium bovis* in 20 discrete areas of New Zealand in association with persistent infection in adjacent cattle and deer herds. The role of ferrets, feral cats and pigs in the epidemiology of Tb has still to be clarified.

The Animal Health Board's feral/wild animal control strategies⁸ are aimed at:

- preventing the establishment of Tb in the feral/wild animal populations in non-endemic areas;
- eradicating tuberculosis from the feral/wild animal populations where economically and technically possible;
- preventing the expansion of infected feral/wild animal populations into economically important primary production areas;
- localised targeted control to reduce number of infected cattle and deer.

Implementation of this strategy requires undertaking an initial feral/wild animal control operation followed by an annual maintenance control programme in defined localities. In endemic areas, the effect of possum control along the Conservation estate/pasture margin only lasts approximately 12 months, because of immigration from inside the estate. Future control operations in such areas will control a wider fringe of the Conservation estate and target other feral/wild animals in addition to possums.

For disease management purposes, New Zealand has been divided into *endemic* and *non-endemic* areas (Figure 2).

Endemic areas

MAF considers that tuberculosis is endemic in five discrete areas of New Zealand, where because of their large size, extensive native bush cover and range of infected species, it is considered technically impossible to eradicate tuberculosis from the feral/wild animal populations. The Animal Health Board's objective for endemic areas is to restrict the spread of tuberculous feral/wild animals into economically important primary production areas of New Zealand and reduce the number of reactors and infected herds. This strategy has been successful in parts of the central North Island and southeastern North Island endemic areas.

The five endemic areas together cover approximately 22% of New Zealand's land area, but contain approximately 76% and 55% of cattle and farmed deer movement controlled herds respectively (Table 1). A higher percentage of deer herds came on MC than cattle herds

in 1991/92, but a similar percentage were removed from MC. Based on incidence of herd infection (AHI%), cattle and deer herds in endemic areas were 17 and 11 times more at risk of becoming infected respectively than herds in surveillance areas. The endemic areas also produced 76% of cattle reactors and 92% of tuberculous cattle, compared with only 37% of deer reactors and 38% of tuberculous deer (Table 2). This highlights the impact that Tb feral/wild animals have on cattle in comparison to areas where they are less of a problem or absent. It is possible that a similar picture will emerge for deer in the future.

Non-endemic areas

The balance of New Zealand is classified as non-endemic. The non-endemic areas contain the remaining 15 areas where tuberculous feral/wild animals have been identified. These are known as *Tuberculosis Investigation Areas (TIAs)*.

Table 1. Number and percent of cattle and deer herds under movement control restrictions together with the AHI% and AHR%, categorised by Tb area status for the 1991/92 season

	Cattle				Deer			
	MC Herds	% of MC Herds	AHI % ¹	AHR % ²	MC Herds	% of MC Herds	AHI % ¹	AHR % ²
Endemic	992	75.5	6.6	28.8	142	55	11.4	26.8
Non-endemic								
Fringe	89	6.8	2.7	42.1	21	8	2.2	48.7
TIAs	95	7.2	3.4	33.9	35	14	5.2	14.6
Surveillance	137	10.4	0.4	48.3	60	23	1.0	48.6
Total	1313				258			

¹ AHI% = Annual incidence of infected herds

$$= \frac{\text{No. of herds placed on MC during the year}}{\text{No. of herds in area} - \text{mean No. herds on MC during year}} \times \frac{100}{1}$$

² AHR% = Annual incidence of herds removed from Movement Control

$$= \frac{\text{No. of herds being removed from MC during year}}{\text{No. of herds on MC at the start of the year} + \text{No. of herds placed on MC during the year}} \times \frac{100}{1}$$

MAF considers that tuberculosis can be eradicated from the feral/wild animal populations in the TIAs by the application of current feral/wild animal control techniques. This view is supported by modelling³. The TIAs cover approximately 1.5% of New Zealand and contain 7% and 14% of cattle and farmed deer movement controlled herds respectively (Table 1). A higher percentage of deer herds came on MC than cattle herds and a smaller percentage were removed from MC during 1991/92.

Based on incidence of herd infection (AHI%), cattle and deer herds in TIAs were 8 and 5 times more at risk of becoming infected respectively than herds in surveillance areas. Deer herds in TIAs had only one third the probability of being removed from MC as herds in Surveillance areas. The TIAs produced 9% of cattle reactors, but only 4% of tuberculous cattle. In comparison, 13% of deer reactors and 28% of tuberculous deer came from TIAs (Table 2). Therefore, TIAs are areas where a concerted control effort could achieve a substantial reduction in number of infected deer and MC herds.

The non-endemic area also includes the *Fringe areas* which encompass the endemic areas. Fringe areas account for approximately 17% of New Zealand's land area and contain 7% and 8% of cattle and farmed deer movement controlled herds respectively. Based on incidence of herd infection (Table 1), cattle and deer herds in TIAs were 6 and 2 times more at risk of becoming infected respectively than herds in surveillance areas. The fringe areas produced 5% of cattle reactors and 1% of tuberculous cattle compared with 10% of deer reactors and 3% of Tb deer.

Table 2. Number and percentages of Tb reactors and tuberculous animals found in the various Tb areas in 1991/92

	Cattle				Deer			
	No. React	% of React	No. Tb ³	% Tb	No. React	% of React	No. Tb ³	% Tb
Tb endemic	4523	76	2949	92	625	37	249	38
Tb non-endemic								
Fringe	282	5	43	1	177	10	19	3
TIAs	539	9	118	4	216	13	189	28
Surveillance	593	10	92	3	690	40	204	31

The balance of New Zealand is categorised as *Surveillance areas*, which together comprise approximately 60% of the land area and contains 10% and 23% of cattle and farmed deer movement controlled herds respectively. The surveillance area produced 10% of cattle reactors and 3% of Tb cattle. In comparison, 40% of deer reactors and 31% of Tb deer

³ No. Tb shows the number of tuberculous reactors together with the number of tuberculous non-reactors found during routine slaughter

came from surveillance areas. Greater progress can be made in eradicating Tb from deer herds in surveillance areas.

The Animal Health Board's five year strategy for Tb control

The Animal Health Board's five year strategy for the control of tuberculosis was developed after wide consultation with interested groups including Regional Animal Health Advisory Committees, Regional Councils, Federated Farmers and New Zealand Veterinary Association. The strategy was finalised after the Government announced its decision on 25 May 1993 to provide an extra \$6.1 million per year for 5 years for Tb vector control. The AHB's 5 year strategy will form a core component of the Pest Management Strategy for Tb control under the Biosecurity Bill, which is due for its second reading in August 93.

AHB 5 year objectives:

- 1) To reduce the percentage of movement controlled herds (deer and cattle combined) in endemic areas by 30 - 50%, and the number of tuberculous reactors by 50 - 70%. Table 3 shows the new level for herds on MC and Tb reactors if this objective is to be met.
- 2) To reduce the percentage of movement controlled herds in the non-endemic areas to 0.2% (ie the internationally recognised level for official freedom from Tb). Table 3 shows expected number of herds on MC before this objective can be met.
- 3) To prevent the establishment of new endemic areas and expansion of existing endemic areas into farmland free of feral/wild Tb vectors.
- 4) To encourage individual farmers to take responsibility for the control of Tb within their herds.

Key activities identified as important to achieve these objectives:

To achieve *objective 1* and assist in achieving *objectives 2, 3 & 4*, greater effort must be put into Tb vector control in prioritised areas. A national perspective in prioritising control operations is required to ensure that money invested in feral/wild animal control will best meet AHB objectives. This requires that Tb is prevented from establishing in feral/wild animal populations, or eradicated or controlled in the most cost-effective manner. Table 4 highlights the problems of maximising the return for the dollar spent. In particular, the South Island only contains approximately 15% of New Zealand's cattle and cattle herds, has 43% of the movement controlled herds and produces 33% of reactors, but contains approximately 70% of endemic and fringe areas. Deer percentages are more evenly distributed.

Table 3. Current Tb reactors and herds on MC compared with forecast figures based on meeting AHB's first and second objectives.

	Endemic areas		Non-endemic areas	
	1992/93 ⁴	1997/98	1992/93 ⁴	1997/98
Cattle herds on MC	1050	Reduce combined MC herds by 30 - 50 %: 600 ⁵ - 840	340	Reduce combined MC herds to 0.2% figure: 86 ⁶
Deer herds on MC	146		120	
No Cattle reactors	4636	Reduce combined reactors by 50 - 75% : 1360 - 2720 ⁵	1464	Expected reactors: 500
No Deer Reactors	800		1200	

Table 4. Percentages of total endemic/fringe areas, cattle, deer, herds, reactors and MC herds categorised by North and South Island

	% endemic /fringe	% cattle	% Herd	% react	% MC herd	% Deer	% Herd	% react	% MC herd
North Island	31%	85%	85%	57%	67%	50%	51%	59%	54%
South Island	69%	15%	15%	43%	33%	50%	49%	41%	46%

In 1993/94, the Government provided an additional \$6.1 million per year for Tb vector control (includes possums, ferrets, feral deer & pigs) to be spent on the Conservation estate and an adjacent buffer of farmland in areas of concern. This funding will be allocated to high priority endemic areas, such as the central North Island, southeastern North Island and

⁴These are forecast figures, but will be within 3% of the true figures, except deer reactors, which will be within 10%.

⁵Range of herds on MC and reactors slaughtered if AHB's first objective is to be met.

⁶Number of combined deer and cattle herds on MC if AHB's second objective is to be met.

parts of the West Coast of the South Island. In these areas, it is aimed to widen the buffer of Conservation estate controlled to reduce the impact of possum immigration and assist herds in these areas to come off movement control. In addition, areas of DOC estate adjacent or contiguous to endemic areas that could act as zones through which feral wild animals could spread and place fringe/surveillance areas at risk will also receive funding. This could include areas such as the northern Ruahines, eastern Kawekas, the north-western and south-western parts of the Clarence/Waiiau endemic area, parts of the West Coast and the eastern part of Southland.

AHB funding is likely to be targeted at reducing the size of major endemic areas where there is the potential to reduce the risk of infection for relatively large numbers of herds, such as is found in the Wairarapa and parts of the central North Island.

Intensification of Tb vector control aimed at eradicating Tb from the feral/wild animal populations in TIAs will also be prioritised, to prevent the infection becoming established in these populations. During the last year, the policy of maintaining possum numbers below the threshold for disease transmission over the last 4 years, appears to have eradicated tuberculosis from the possum population in one TIA (Te Puna) as predicted by the computer model. Eradication is being attempted in the 15 remaining TIAs and so far results are encouraging.

Funding of Tb vector control

Table 5 shows existing and additional funding for Tb vector control as well as possum control on the DoC estate for conservation reasons.

Table 5. Sources of 1992/93 and proposed 1993/94 funding for Tb vector and conservation reasons.

Government	Tb-Related control (\$ million GST incl)		Conservation-Related (\$ million GST incl)	
	1992/93	1993/94	1992/93	1993/94
a) Animal Related	4.9	11.0	3.0	6.0
b) Employment Related		3.5		2.4
Regional Councils	3.0	4.0		
AHB	-	0.7		
Total	7.9	19.2	3.0	8.4

The Government has allocated approximately \$3.5 million to Regional Councils to use Taskforce-Green people to assist in Tb-related vector control. This work will complement AHB Tb-possum related work. The Department of Conservation proposes to spend approximately \$8.4 million in 1993/94, on possum control for conservation purposes. The AHB, MAF and DoC coordinate their control efforts to ensure that there is no duplication of effort and that Tb-related and conservation related control complement one another wherever possible. Of the \$19.2 million proposed for Tb-related control in 1993/94, approximately \$7.4 million/year will be targeted for control on the DoC estate and adjacent buffer of farmland in priority areas over the next 5 years.

Achieving AHB's *second objective* will be greatly assisted by the reduction in tuberculosis in the endemic areas. It is considered that most of the Tb cattle detected in non-endemic areas became infected in endemic areas. This trend is not as clear for deer. Therefore, the movement of infected cattle and farmed deer into non-endemic areas must be prevented if the international level of less than 0.2% of herds on movement control is to be met. The Animal Health Board have proposed a number of activities which are designed to prevent the movement of infected cattle and deer. These include:

Area Movement Control:

Geographic areas where the risk of infected cattle in non-movement controlled herds is assessed as greater than 0.1% were categorised as *declared movement controlled areas*. These areas are shown in figure 2. Cattle and deer over 12 months of age in declared movement controlled areas are required to pass a tuberculin test 90 days prior to movement off the farm and must be accompanied by a farmer signed, *Tb status declaration card*. This concept was first introduced in November 1992. In August 1993, South Kaipara and Mackenzie Basin will also become declared movement controlled areas. In January 1994, the pre-movement test will be required to be undertaken *within 60 days of movement* and the age limit for cattle and deer required to pass a pre-movement tuberculin test before moving off the property, will *reduce from 12 months to 3 months*. This latter step was considered necessary, as young deer in particular, were identified as posing a similar risk of being infected as deer older than 12 months.

Cattle or deer going straight to slaughter are required to be accompanied by a Tb status declaration card, but do not have to pass a pre-movement Tb test.

Reduction of reactor compensation to 85% FMV

In December 1992, compensation for Tb reactor cattle was reduced to 85% of FMV for reactors from designated risk areas and for NVL reactors in surveillance areas. Tuberculous reactors from surveillance areas had their compensation reduced to 40%. The Animal Health Board has indicated to cattle producers that it intends to *abolish compensation by July 1995*. These changes are intended to send a signal to cattle farmers that they will have to take more responsibility regarding the purchase and management of cattle.

Figure 2

KEY

- Endemic areas
- ▣ Tb Investigation areas (TIA)
- Declared Movement Controlled Areas (DMCA) (Shaded area within oval)



Movement of cattle and deer from movement controlled herds

As from 1 August 1993, all cattle moving from movement controlled herds and deer moving from "clear" movement controlled herds will, unless going direct to slaughter, be required to:

- pass a Tb test within 60 days prior to movement from a movement controlled herd;
- be identified with official white movement control ear tags;
- be accompanied by a MAF movement permit.
- pass a post-movement Tb test. The post-movement test is to be undertaken a minimum of 90 days after the pre-movement test, and between 60 - 120 days after arrival on the purchasers property for cattle and between 90 - 120 days after arrival for deer. If all animals in the group have a clear post-movement test, then white movement control tags will be removed.
- If cattle or deer from movement controlled herds are going direct to slaughter, they must be accompanied by a MAF movement controlled permit.
- Deer from infected movement controlled herds can only move direct to slaughter.

These movement control requirements are intended to provide greater protection to purchasers herds from movement control cattle and deer, lower the probability of "dealers" purchasing movement controlled animals and therefore reduce the distribution of potentially infected animals over large distances. The requirement for pre and post-movement testing may also affect prices of cattle and deer sold from movement controlled herds. The Animal Health Board considers that any reduction in prices received for "white tagged" cattle and deer will cause farmers under movement control restrictions to take farm management decisions that will reduce the risk of exposing their livestock to potential Tb sources. This will assist the achievement of AHB's second and third objective, and contribute towards meeting its fourth objective.

Movement controlled herds maintain herd reconciliation records

From January 1994, all movement controlled herds will be required to maintain herd reconciliation records (ie keep a record of movement into and out of the herd together with births and deaths), to assist in compliance auditing on stock movement control.

Use of Tb status declaration cards on a national basis

On the 1 August 1993, all cattle and deer over 12 months of age in New Zealand will require to be accompanied by a *Tb status declaration card* before they are moved. In January 1994, the age limit will reduce from 12 months to 3 months. Thus farmers throughout New Zealand will be able to purchase stock knowing the disease status of the

herd of origin. This will contribute towards meeting AHBs fourth objective.

Future Activities

The AHB has signalled that a number of activities are still under consideration, but are likely to be introduced over the next 5 years. They include:

- A permanent animal identification system;
- Requirement for all herds in Declared Movement Controlled Areas to maintain herd reconciliation records.
- Suspension of herd status for purchasers of MC cattle and deer;
- Allowing cattle from infected movement controlled herds to only move directly to slaughter.
- The promotion of Tb Farm Focus groups as a means of assisting farmers in problem areas to take more responsibility for controlling disease in their own herds.
- Implementation of the *protected area* concept for regions that have, or are about to meet, the level that would categorise them as officially free from Tb.

Research

The National Science Strategy Committee (Possum/ Tb Control) identifies research strategies and facilitates the development and coordination of research projects in the possum/Tb control area. In 1992/93, approximately \$6.7 million was spent on possum/Tb related research¹⁰. Applied research is directed at describing the epidemiology of Tb in cattle, deer and feral/wild animal vectors, and identification of more cost-effective methods of controlling the spread of Tb. The Government provided an additional \$2 million per year for 3 years starting in 1993/94 to investigate methods of biological control of possums which at some future date may assist in reducing possum populations throughout New Zealand. In addition a major research effort has been undertaken to develop a vaccine against tuberculosis for cattle, farmed deer, or possibly possums.

However, use of a vaccine will not replace the need for Tb vector control and it is unlikely that a biological control agent will become available within the next 15 years. Therefore New Zealand will need to continue to rely on a relatively cheap, safe, effective, environmentally acceptable, humane toxin for large scale animal control. Currently 1080 fill this role.

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