

# Public perception of pests in New Zealand: essential information for moving forward

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## Abstract

Pest control is a public issue, and many members of the public want a say in how New Zealand makes decisions about pest control and what methods are used for control. The public's perception of pests and their control is thus important information for anyone officially involved in making those decisions.

To best assist in the development of new pest control technologies, research on public perceptions needs to be conducted early in the development stages of the technology. This allows those developing the technology to take account of public issues and concerns before the technology is so fixed that it cannot be modified. Such an approach will be important for the successful public deployment of New Zealand's likely next major advance in pest control: fertility control of possums.

We in New Zealand already know, from qualitative and quantitative research conducted by the authors, that the public generally accepts that possums are a pest that requires control, but that possums are also regarded as sentient beings that deserve to be treated humanely. Fertility control is the most publicly acceptable form of biological control of possums, and biological control is more acceptable than poisoning. We do not know what lies behind people's concerns about biological controls, what they would regard as a safe or unsafe technology, and what they see might be the balance of dangers and benefits of biological control. This knowledge will become increasingly important in understanding the acceptability or unacceptability of specific possum control technologies as they are developed and become available.

## Introduction

Pest control is not simply a technical issue, it is also a public issue. This was shown clearly in 1997 when, after the Ministry of Agriculture decided, on technical grounds, against importing the virus responsible for Rabbit Haemorrhagic Disease (RHD), the disease was suddenly found to be in New Zealand anyway, being actively spread by farmers. Public demonstrations against the use of 1080 poison also clearly illustrate public interest in pest control. Many members of the public want a say in how New Zealand makes decisions about how to control vertebrate pests, what methods are used for control, and even whether some vertebrates are pests at all. The public's perception of pests and pest control is thus an important factor in the decision-making process.

To best assist in the development of new pest control technologies, research on public perceptions needs to be conducted early in the development stages of the technology. This

allows those developing the technology to take account of public issues and concerns before the technology is so fixed that it cannot be modified. Such an approach will be necessary if the public deployment of New Zealand's likely next major advance in pest control, fertility control of possums, is to be successful. In the rest of this paper, we focus on public perceptions of possums and possum control, because they are considered a major pest, control of their fertility is being actively researched, and public perceptions of them have been studied.

We in New Zealand already know (Fitzgerald *et al.* 1996; Wilkinson & Fitzgerald 1998) that the public generally accepts that possums are a pest that requires control, but that possums are also regarded as sentient beings that deserve to be treated humanely. We know that, generally, fertility control is the most publicly acceptable form of biological control of possums, and biological control is more acceptable than poisoning. We do not, however, understand in any depth what lies behind the concerns people have about biological controls, what they would regard as a safe or unsafe technology, or what risks they would be willing to tolerate to stop the destruction of New Zealand's native forests and the exacerbation of bovine tuberculosis by possums. We also don't know what information the public needs or wants about biological control methods, nor whether previously reported attitudes still hold in the light of recent controversy over other genetic engineering issues.

## **What research has been done**

There have been a number of recent research studies directly relevant to public perceptions of the biological control of possums in New Zealand. Sheppard & Urquhart (1991) asked questions about possums as part of their survey on public attitudes to pests. Fitzgerald *et al.* (1994) conducted a large-scale study, focussing on both possum and rabbit control, and included examination of public and sector group attitudes. This study involved 11 focus groups (moderated group discussions which encourage interactions between participants to stimulate discussion and thereby elicit beliefs and values in depth) with members of various interest groups and the public, as well as a nationwide survey. The work was summarised in Fitzgerald *et al.* (1996). Wilkinson & Fitzgerald (1998) followed this up, in 1996, with similarly structured qualitative and quantitative research on public perceptions of rabbits and the then-proposed release of RHD.

Recent research studies in several related fields are also relevant. These fields include public perceptions of genetic engineering, public knowledge of science, and the public credibility of science and scientists. Such related research studies include Couchman & Fink-Jensen's (1990) survey of perceptions of genetic engineering in New Zealand (including issues of knowledge and trust), Macer's (1994) international survey of bioethics, a 1995 Roy Morgan Gallup Poll on rabbit control (which covered New Zealand and Australia), the 1997 New Zealand Eurobarometer survey on public perceptions of biotechnology (Macer 1998), and research published in 1998 on public interest, understanding, and attitudes concerning science in New Zealand (Capper 1998, Capper & Bullard 1998). A comprehensive review of recent European research on public attitudes to biotechnology, risk communication, and media coverage of risk and genetic engineering is contained in Durant (1992). Unfortunately, the social science research on public attitudes to biotechnology is sometimes fragmented. For example, Capper's (1998) review does not mention any of the relevant New Zealand studies.

## What we know about public acceptability of biological control

From these studies we have learnt a considerable amount about how the public perceive biological control of possums, including fertility control. In our 1994 study (Fitzgerald *et al.* 1996), 32% of respondents had not previously heard of the term "biological control of pests", 45% had heard of it but said they knew little about it, and 23% had heard of it and said they knew enough about it to be able to explain it. Awareness of the concept of the "biological control of pests" was not a strong determinant of people's level of acceptance of biological controls. The level of knowledge of the general term "biological control of pests" compares favourably with knowledge of a specific and widely publicised biological control, RHD (then known as Rabbit Calicivirus Disease, RCD), 2 years later (24% not heard, 45% heard but knew little, 31% heard and could explain).

The Sheppard & Urquhart (1991) study asked respondents how "suitable" they considered "the introduction of diseases, e.g. viruses, which will affect only possums" for "reducing the number of possums". In their study, 49% of respondents rated that method of possum control "suitable" or "very suitable". There were significant differences between genders and between ages, with males and younger people more in favour.

According to our 1994 study (Fitzgerald *et al.* 1996), a "genetically engineered organism that would kill only possums" was the most acceptable biological control, rated acceptable by 45%; more than a parasite (35%), bacteria (29%), or virus (29%). A high proportion (10 U 15%) did not know about the acceptability of these biological controls. Generally, the acceptability of biological controls was somewhere between that of manual methods (shooting and trapping) and poisons. Males were more accepting of the biological control technologies. In the focus groups conducted as part of our 1994 study, biological controls were seen as taking "too long to develop". They were considered to be acceptable if humane (quick death, no pain or suffering), specific (no impact on other wildlife, no effect on humans), and safe (generalised concerns about unknown effects, future problems, vector risks). When asked about the use of genetically modified organisms (GMOs), 58% of the 1994 survey respondents felt that such use in the "control of animal pests" was acceptable.

Our 1994 study (Fitzgerald *et al.* 1996) also showed that a biological control that "stops possums breeding" was by far the most acceptable form of biological control, with 73% of respondents rating it "very acceptable" and 12% rating it "acceptable". This was the only universally acceptable form of biological control, and the only form that was acceptable to more than half the members of all segments of the respondents. There were no significant differences between genders, age groups, location, or organisational membership. People had relatively clear views on its acceptability: only 8% gave a neutral response and only 1% did not know. Contraception was also the favoured form of biological control in the focus groups.

In the focus groups conducted as part of our 1996 study of public attitudes to rabbit control (Wilkinson & Fitzgerald 1998), people saw fertility control as a possible long-term solution to the rabbit problem, but felt it would have to be shown to be safe, humane, and foolproof. Fertility control, contraception, and sterilisation were seen as not killing all the rabbits (an

advantage, as it represents some kind of "lesser evil"); potentially affecting other animals; requiring oral vaccination and baits, or maybe a viral vector; and acceptable if safe but requiring humans to "play God" and "tinker with nature".

Overall, we know that the acceptability of a new biological technology is a *complex* of several components. These components include safety, humaneness, effectiveness, affordability, potential to generate social good (e.g., by providing employment), and congruence with one's ethical or religious beliefs. No one of these components appears to be the critical determinant of acceptability. However, safety is clearly an important component.

## **What we know about public perceptions of safety in biological control of pests**

From our 1994 survey (Fitzgerald *et al.* 1996), various safeguards for biological controls for possums were seen to be essential by most of the respondents. Not affecting humans was essential for 96% of respondents, not affecting other animals 87%, unable to spread outside New Zealand 79%, humane 69%, and not requiring another organism to spread it 56%. The larger number of "don't know" responses to the last item (9%) than to the other items (2% or lower) suggests a number of people did not understand the concept of a vector. Females required a higher level of safeguard than males. The ranking of the importance of these safeguards was the same for males and females and all age groups.

In our 1996 survey about rabbits (Wilkinson & Fitzgerald 1998), 45% agreed or strongly agreed that they generally believed scientists' reassurances about the safety of RCD, and 33% disagreed or strongly disagreed. This less-than-full trust in what the scientists say occurred despite people saying that MAF should take a lot of notice of scientists in its decision making about the introduction of RCD (more notice than for any other group except farmers with a rabbit problem).

In the 1996 study's focus groups (Wilkinson & Fitzgerald 1998), "safe" was given as one of the criteria for acceptability of the introduction of RCD. The virus needed to be safe for humans, avoid non-target mortality, and have no environmental residue. RCD was seen by one group as being safer than myxomatosis, because it would not damage New Zealand's "clean, green" image. Safety was seen to be a feature of fertility control, which was seen as a long-term solution to the rabbit problem.

## **What we don't know about the acceptability of possum fertility control technologies**

There are still many things we do not know about the acceptability of biological control of possums and, in particular, fertility control. These issues can be classified into those related to ethics and value systems surrounding pests, those related to specific concerns about the technologies, and process issues. Following is a list of what we consider to be the most important unknowns, in a rough order of importance:

- ÿ Are there any concerns with "veto power", that is, they are so important that people are not willing to trade them off against other concerns?

- ỹ Related to this, can concerns be ordered or ranked (and thus compared)? Or do they occur in different dimensions, which would make them difficult or even impossible to compare (and therefore trade off)?
- ỹ Do stated concerns about effects on human health mask something deeper or more important?
- ỹ Are the ethical considerations of fertility control different from the ethics of other forms of biological control?
- ỹ What is it that makes immunocontraception more acceptable than other biological controls? Is it because people seem to want to avoid degradation of the animal through killing it or causing it to suffer?
- ỹ Is there a difference between the acceptability of a biological control and a biocide?
- ỹ Is contraception universally more preferable than killing pests? Might some people with particular belief systems prefer killing to contraception?
- ỹ How stable are public perceptions of new biological technologies, in the face of disaster or controversy in a related (or even unrelated) field?
- ỹ Do people think differently about controlled experimentation or trials and an actual release? For example, do they see experimentation as the "thin end of the wedge"?
- ỹ How much pre-explanation of the proposed control technology is required before people can give a reasoned response about it?

Our work (particularly the focus groups) has provided an understanding of the range of concerns of the public, but it does not explain what lies behind these concerns. Examples could include beliefs and values about life, nature, "pollution", and meddling. This would provide a better understanding of the criteria used by the public and interest groups when considering biological technologies.

## **What we don't know about "safe"**

Safety has many dimensions and components. Merely knowing that something is seen as "safe" does not tell us why, or in what way, it is seen as safe. We do not know what, specifically, people mean by "safe" when they say it is important for their acceptance of biological control of pests. The meaning of safety is socially constructed, and might not be universally agreed, nor might it be based on logic alone. Frequently safety and ethics are confused.

More concretely, some components of the safety of a biological control or the form of its delivery might be:

- ỹ Is its action predictable?
- ỹ Is it reversible?
- ỹ Is a vector required?
- ỹ How long does it remain in the environment?
- ỹ Will it get into the food chain or affect the food chain?
- ỹ Will it affect humans in any way?
- ỹ Is it specific to the target animal currently?
- ỹ Will it remain specific in the future?
- ỹ What level of guarantee is required?

Research is required to determine whether these issues really are those that people consider when they think about the safety of a biological control technology.

Another factor is the nature of the relationship between "safe" and "unsafe". Most research on the acceptability of biological technologies focuses on the extent of positive perceptions, but it might prove to be even more useful to understand negative perceptions, because they might prove to be even more influential than positive perceptions in determining whether a new technology is permitted to be used. Some research of this nature has already been done (e.g., Hoban *et al.* 1992). Are people perceiving science as becoming more safe or more unsafe, or are these perceptions stable?

## The way forward

The Parliamentary Commissioner for the Environment (1998) identified social values as one of two current research gaps in possum management. The Commissioner's report pointed out that increasingly sophisticated control technologies bring with them larger and more complex risk issues that communities will need to understand and evaluate. Funtowicz & Ravetz (1992) described risk assessment areas they called "wild", where facts are uncertain, values in dispute, stakes high, and decisions urgent. In these areas, they argue, scientists and professionals alone cannot make the assessment, and a **dialogue among all stakeholders in a problem must be begun**, regardless of their formal qualifications or affiliations. They called this dialogue "post-normal science". Such an approach will be necessary to meet the public's needs when it comes to making a decision on something as "wild" as the introduction of a biological technology such as possum fertility control.

The social acceptability (or unacceptability) of any new biological technology derives from the perceptions of two main groups of people: groups with a special interest in the outcome (often called "stakeholders", although some groups hold a greater stake in the outcome than others), and the public (which has a general interest). Interest groups can be broken down into three categories: groups that are likely to be directly affected by the release of a biological control (e.g., possum control workers, agencies dealing with possums, farmers, public health agencies); groups that make a knowledge-based judgement, and usually have special knowledge (e.g., public health specialists, risk assessment professionals, scientists, and ethicists), and groups that make a value-based judgement, usually advocacy groups. The latter two groups sometimes overlap: the judgements of people with special knowledge are also influenced by their values, and advocates often have special knowledge. Our separation, therefore, is based on the judgements, rather than the people who make them. The public can be divided into those who are interested and those who are not.

To determine the concerns of interest groups, consultation with only those groups is sufficient (although care must be taken to ensure no interest groups are left out of the discussion). To determine the concerns of the public, **broader social research is required**. The public cannot tell us anything more about effects, knowledge, or values than the three types of interest groups. However, public views provide a measure of the relative weight of the other three groups, concerns, and interests.

## How we could move forward

In August 1996 the Talking Technology Trust held the first consensus conference in New Zealand. The consensus conference concept was developed in Denmark to produce a consensus on technological issues. The first topic debated in New Zealand was "Plant biotechnology". A panel of 16 people representative of the community spent three weekends over three months consulting with experts such as scientists, environmentalists, policymakers and representatives of cultural groups, and developed a series of recommendations to the community. The report from this conference demonstrated that a consensus approach to opinion-forming can result in a well-considered, balanced view among members of the public with no special previous knowledge or training (Talking Technology Trust 1996). The consensus conference approach did not, however, demonstrate how information can be communicated effectively to a wider public that does not receive the benefit of close contact with interest groups, to allow a considered view to be formed among the wider public.

An alternative approach would be to establish a policy panel, or reference group. The reference group would involve representatives from all identifiable groups of stakeholders (possibly also including members of the general public). Reference group members do not have to represent particular organisations, but might simply represent a particular view. The reference group members would be consulted about their (and, if appropriate, their organisation's) specific issues of concern about the safety (or otherwise) of the possum fertility control technology in question. They would also be consulted about the information needed, and the appropriate processes for providing and examining that information, that would satisfy them (and, if appropriate, their organisation) that the issues of concern had been properly resolved. They would also have a role in nominating issues that would need to be included in the social research on public perceptions. Such a group need not be maintained solely for consultation about possum fertility control: it could well play a role in evaluating the acceptability of all manner of new biological technologies being developed by a range of organisations.

To properly evaluate the public acceptability of fertility-based biological control technologies for possums, two research phases are necessary. These would involve a qualitative phase, consisting of a series of focus groups to explore acceptability and safety, and to help design the survey questions, then a quantitative phase, involving a survey to determine public perceptions. The focus groups with members of key interest groups will tell us the range of perceptions, and the survey will tell us how widely those perceptions are held among members of the wider community.

The Parliamentary Commissioner for the Environment, in conjunction with Landcare Research and AgResearch, has recently begun a project to provide some of this information. The project is likely to contain elements of all of the above approaches. It will present results about the acceptability of different approaches to biological control of possums among different groups of the public, stakeholders, and interest groups, and explore reasons for different levels of acceptability.

## Conclusion

As useful as research on public perceptions is, for something as "wild" as the introduction of a fertility control for possums, it is not enough. Real dialogue must be encouraged. Also, the consultation processes prescribed in the Hazardous Substances and New Organisms Act 1996 (the Act that establishes the decision-making process for the introduction of new organisms) are not enough. The Act provides for the Environmental Risk Management Authority to call for public submissions on the proposed release of a new organism and to hold public hearings, but such a bureaucratic approach does not constitute real dialogue.

We have already recommended that an active programme of public information and involvement needs to be mounted if a decision on the deployment of biological controls that is acceptable to the public is to be made (Fitzgerald *et al.* 1996: 26U27). In situations where the public debate about other biological technologies, particularly genetically modified foods, is changing rapidly, informed and genuine public debate is difficult to foster. In such a situation, one way to begin is by bringing together all the interests into a consultative group. The various interests are most likely to be confident of the integrity of such a process if the group were convened by an independent agency. Even if no official agency were willing to convene such a group, the proponent of the new technology would still stand more chance of its proposal receiving genuine consideration by stakeholders, interest groups, and the public if it established a consultative group itself.

## References

- Capper, P. 1998: Science and technology attitudes and performance: a brief literature review. Report prepared for the Ministry of Research, Science and Technology. Available at <<http://www.morst.govt.nz/pubs/attitudes/index.htm>> (8 April 1999).
- Capper, P.; Bullard, T. 1998: Science and technology interest, understanding and attitudes in the New Zealand community. Report prepared for the Ministry of Research, Science and Technology. Available at <<http://www.morst.govt.nz/pubs/interest/index.htm>> (8 April 1999).
- Couchman, P.; Fink-Jensen, K. 1990: Perceptions of genetic engineering in New Zealand. Christchurch, DSIR Social Science.
- Durant, J., ed. 1992: Biotechnology in public: a review of recent research. London, Science Museum, 201 p.
- Fitzgerald, G.P.; Saunders, L.S.; Wilkinson, R.L. 1994: Doing good, doing harm: public perceptions and issues in the biological control of possums and rabbits. Christchurch, New Zealand Institute for Social Research and Development Ltd., 78p.
- Fitzgerald, G.P.; Saunders, L.S.; Wilkinson, R.L. 1996: Public perceptions and issues in the present and future management of possums. MAF Policy Technical Paper 96/4. Wellington, Ministry of Agriculture, 36p.
- Funtowicz, S.O.; Ravetz, J.R. 1992: Three types of risk assessment and the emergence of post-normal science. In: Krimsky, S.; Golding, D. eds. Social theories of risk. Westport, Connecticut, Praeger. Pp. 251U274.
- Hoban, T.; Woodrum, E.; Czaja, R. 1992: Public opposition to genetic engineering. *Rural Sociology* 57: 476U493.
- Macer, D. R. J. 1994: Bioethics for the people by the people. Christchurch, New Zealand, Eubios Ethics Institute, 452 p.

- Macer, D.R.J. 1998: Public perception of biotechnology in New Zealand and the international community: Eurobarometer 46.1. Tsukuba, Japan, Eubios Ethics Institute, 49 p.
- Parliamentary Commissioner for the Environment 1998: Possum management in New Zealand: critical issues for 1998. PCE Progress Report No. 1. Wellington, Office of the Parliamentary Commissioner for the Environment, 9 p.
- Roy Morgan Research Centre 1995: Rabbit problem survey. Melbourne, Roy Morgan Research Centre Pty Ltd.
- Sheppard, R.; Urquhart, L. 1991: Attitudes to pests and pest control methods. Research Report 210, Agribusiness & Economics Research Unit. Lincoln, Lincoln University, 74p.
- Talking Technology Trust 1996: Plant biotechnology. Available at:  
<<http://www.consumer.org.nz/tech/plant.html>> (8 April 1999).
- Wilkinson, R.L.; Fitzgerald, G.P. 1998: Public attitudes to Rabbit Calicivirus Disease in New Zealand. Landcare Research Science Series No. 20. Lincoln, Manaaki Whenua Press, 56p.