

PROOF OF FREEDOM FROM BOVINE TB

FACTSHEET 2016-06

TOWARDS ERADICATION

The ultimate goal of New Zealand's TBfree programme is to eradicate bovine tuberculosis from the country. The target date for achieving this goal is 2055, and there are important milestones along the way: freedom from TB in farmed livestock by 2026; and freedom from the disease in possums, the main wildlife 'vector' or transmitter of bovine TB, by 2040.

Robust scientific methods developed over the past 50 years have guided the policies, management and activity that will deliver these goals. The evidence that the nationwide plan is working is delivered by the Proof of Freedom Utility.

EVIDENCE OF SUCCESS

The science and methodology of eradication is well-founded and working effectively towards those goals, with large areas of the country free of TB-carrying pests.

The Proof of Freedom (POF) Utility is the tool that veterinary epidemiologists use to demonstrate that TB has been eradicated in possum populations after pest control activity and surveys. It involves the evaluation of evidence from wild animal surveys, the number of possums killed in the area over time and herd testing data, to prove there is a high probability – at least 95% – that TB has been eradicated.

After the models had been developed they were subjected to external peer review to test their underlying assumptions, logic, methods and mathematical equations, and give confidence that they would produce representative results. The credibility of the tool was thus established and therefore can be relied upon to demonstrate that areas of focus are TB-free or manageably close to being declared free of disease.

When eradication is achieved, possums are no longer a threat to farmed cattle and deer herds, removing potential harm to animals and pressure on the businesses and livelihoods of New Zealand farmers.

HOW IT WORKS

The PoF tool uses multiple sources of information from surveys of wildlife species – possums, wild pigs, deer and ferrets – and includes results that demonstrate the absence of detected TB in livestock. If TB is detected in any one of these species, especially in possums, then clearly the disease has not been eradicated.

The PoF system components include: Spatial Possum Model (SPM); PoF Utility (a Livestock module and a Wildlife module); a range of processes to prepare data inputs to the models (including automated data extraction scripts, spreadsheet solutions for data collation and input); mapping and graphing solutions; and a template for preparing Proof of Freedom proposals.

Also inputted into the model is the possum control history for each area, enabling the prediction of the absence of disease. This initial probability of TB freedom is then validated using information gained from surveying pigs, deer, ferrets, and livestock.

During possum control phases, which concentrate on reducing possum populations in areas where research has shown TB exists in wildlife and farmed cattle and deer, resources are rarely spent on examining possums for signs of TB. During the surveillance for proof of freedom from disease in a specific area, possums will be captured and examined. It is expected that possums examined during these surveys will not have any signs of TB, thus proving the area's freedom from disease.

ANALYSING THE DATA

An important factor in the analysis is the data from traps that caught no possums. If zero possums are caught at a trap site, there is a near-zero chance TB could persist within a 200-300m radius of that site, as there are too few possums to maintain the disease. Detection devices (chew cards and waxtags) can be employed to provide similar information.

However, before an area can be declared free of the disease, the information collated by the POF system must be examined by an expert scientific panel. If the panel is satisfied that possum levels have been held at low enough densities to stop the disease cycle and there is no expected re-invasion by other infected possums, it is likely to declare the area's possum population TB-free. Their qualitative assessment of all risks and results is combined with the quantitative outputs of the models to deliver a recommendation for eradication.

The Proof of Freedom Utility will ultimately measure the success of TBfree New Zealand's programme and offers a major contribution towards the strategic goal of eradicating bovine tuberculosis from New Zealand.

For more information, please visit ospri.co.nz or read more about the science behind the Proof of Freedom model at [Landcare Research](#)