

THE VALUE OF GOOD DECISIONS

Smart biosecurity actions can confer benefits for centuries



BIOLOGICAL INVASIONS ARE TYPICALLY IRREVERSIBLE

Most of the invasive species that become widespread in New Zealand cannot be removed – we must live with their impacts forever. Since the decisions we make within our biosecurity system can have very long-term implications for ourselves and for future generations, we need to be making the best decisions possible (see “What characterises a good biosecurity decision” brief).

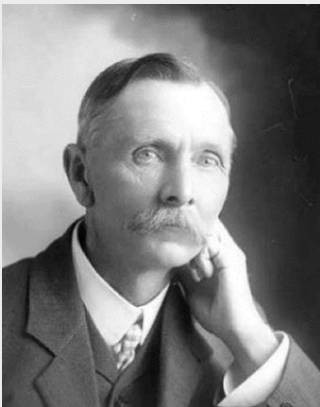
Biosecurity decision makers are frequently required to trade off known short-term costs, such as those associated with eradicating a new invasive pest or pathogen, with uncertain long-term impacts, like the pest’s potential damage to the economy, environment and society. Social discounting (see “Valuing the future”) can help by considering the long-term costs and benefits typically lost in current environmental risk assessments. But another approach is to look to history for the realised outcomes of earlier biosecurity decisions.

AT A GLANCE

Biosecurity decisions often entail irreversible consequences due to the establishment of invasive species, requiring long-term management strategies.

Historical examples, such as the successful eradication of the Mediterranean fruit fly in 1906, provide valuable lessons for informing current biosecurity practices and decisions.

A LESSON FROM HISTORY



Mediterranean fruit fly (Medfly, *Ceratitidis capitata*) successfully invaded New Zealand in 1906 and established populations in Devonport (Auckland), Napier and Blenheim. The Department of Agriculture decided to attempt to eradicate these infestations, despite few effective control tools being available at the time. Government pomologists like

William Boucher (above) expended considerable effort and were ultimately successful at eradicating Medfly from all sites.

We can now look back on nearly 120 years of history to ask: what was this biosecurity decision worth to New Zealand?

A DANGEROUS PEST.

MEDITERRANEAN FRUIT FLY.

For the past few weeks the Government Pomologist, Mr. W. A. Boucher, has been investigating a new orchard pest, as far as Auckland growers are concerned, namely, the Mediterranean fruit fly. The Government Fruit Inspector for Hawke’s Bay reported on the 17th of last month that he had secured two apricots from a garden at Napier, which were infected with maggots, like those of the fruit fly. Mr. Boucher secured some of the specimens, and after watching them with care has now hatched what proves to be five of the Mediterranean fruit fly. Unfortunately this pest is hardier than the Queensland fruit fly, and it is therefore feared may succeed in the New Zealand climate. It

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ASSESSING THE VALUE OF FRUIT FLY FREEDOM

Fruit flies can be very damaging, but for New Zealand's horticultural industries their main economic impact would be to prevent exporting vulnerable fruits, such as kiwifruit and apples, to premium international markets. We compared actual apple and kiwifruit export earnings, made in the absence of fruit flies, with scenarios in which Medfly was not eradicated in 1907/08 so that fruit could only be exported to lesser-value international markets.

New Zealand's fruit exports were minimal until the 1970s, so the absence of fruit flies had minor commercial value for at least 60 years after the eradications. However, fruit exports have increased rapidly in the last 50 years, as has the economic benefit of being fruit fly free (Figure 1).

We estimated that the absence of fruit flies from New Zealand is currently worth between \$550 and \$900 million (NZD, 2022 equivalent) each year, through access to premium export markets alone. This is equivalent to around 0.4% of New Zealand's GDP. Since 1970, fruit fly free status has been worth between \$7.7 and \$10.2 billion, mostly by enabling high value kiwifruit exports.

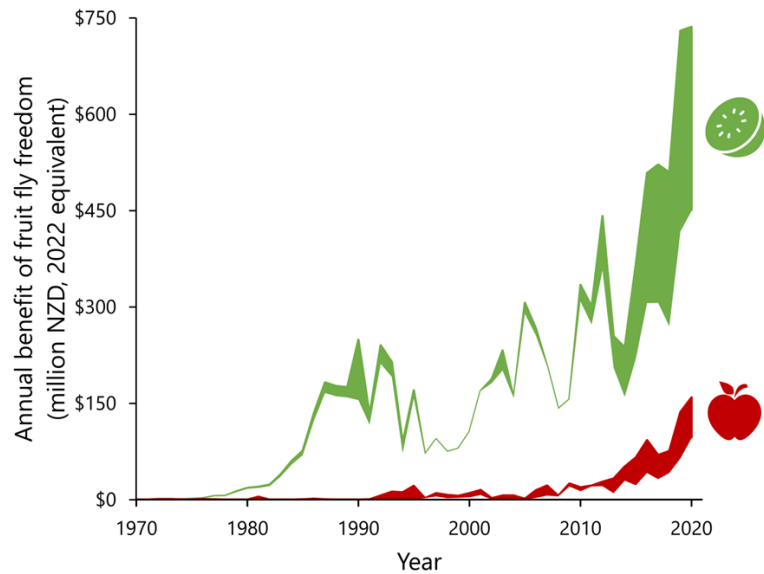


Figure 1: Estimated annual benefits of the 1907/08 Medfly eradications. Ranges indicate best- and worst-case assumptions about alternative market availability.

Key words:

biosecurity, decision makers, Mediterranean fruit fly, intergenerational, pest, eradication, risk, value

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William Boucher could not have anticipated the massive value of his Medfly eradication efforts over a century later. New Zealand's freedom from commercially damaging fruit flies relies on ongoing efforts by MPI, horticultural industries and others, but all of this would be moot if Medfly had not been stamped out in 1907/08.

This case highlights the need for long-term, intergenerational thinking when assessing biosecurity risks. History teaches us that some of the biosecurity decisions made now will continue to reverberate decades and centuries into the future.



FIND OUT MORE

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