

New Zealand island nations could produce enough food in nuclear winter, says study

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Auckland, New Zealand. Credit: Unsplash/CC0 Public Domain

New Zealand is one of only a few island nations that could continue to produce enough food to feed its population in a nuclear winter, researchers have found.

In a new study Professor Nick Wilson, from the University of Otago, Wellington, and independent researcher Dr. Matt Boyd from Adapt Research say five [island nations](#), including New Zealand, could be well placed to continue to produce food despite the reduced sunlight and [cooler temperatures](#) caused by soot in the atmosphere following a nuclear war in the Northern Hemisphere. Australia (an island continent), Iceland, Vanuatu and the Solomon Islands were also likely to have robust food self-sufficiency, even in an extreme nuclear winter.

Their research is published in the international journal *Risk Analysis*.

Professor Wilson says while New Zealand was likely to continue to be able to produce enough food, its production and distribution was still threatened by the country's extreme dependence on imported commodities, such as refined fuel.

The researchers investigated the impact of abrupt sunlight reducing scenarios caused by nuclear war, super volcano eruptions or asteroid impacts on agricultural production globally. They applied published crop models under "nuclear winter" conditions to 38 island nations, combining this with other methods to estimate the food calorie supply. They also assessed a range of resilience factors that might protect countries from the impacts of a nuclear winter.

Dr. Boyd says although some other nations would likely be able to produce enough food, other factors, such as the collapse of industry and social functioning placed their resilience in doubt.

Professor Wilson says the findings are consistent with a [1980s study](#) on the impact of [nuclear war](#) on New Zealand, although the country's resilience has declined since then as its dependence on imported diesel and digital infrastructure has grown.

"Islands such as New Zealand are often very dependent on imports of refined [liquid fuel](#), may lack energy self-sufficiency and are susceptible to breakdowns and shortages of critical commodities. While New Zealand could divert a high proportion of its dairy exports to supply the [local market](#), it lacks the ability to manufacture many [replacement parts](#) for farm and food processing machinery."

Dr. Boyd says the findings of the study reinforce the precarious position many countries would find themselves in during a global catastrophe.

"New Zealand has the potential to preserve an industrial society through this kind of catastrophe, but it is not 'plug-and-play.' A decent amount of strategic planning needs to happen and across a long period of time, but this planning would have benefits in dealing with a wide range of extreme risks."

Dr. Boyd says the findings show there is a need to analyze nuclear winter and other abrupt sunlight reducing scenarios as part of a comprehensive national risk assessment.

"We are not aware of any plan for this kind of global catastrophe, including whether priorities for rationing have been considered.

"With the [government](#) expected to release New Zealand's first National Security Strategy this year it is important that the catastrophic risks associated with abrupt sunlight reducing scenarios do not slip through the cracks."

More information: Matt Boyd et al, Island refuges for surviving nuclear winter and other abrupt sunlight-reducing catastrophes, *Risk Analysis* (2022). [DOI: 10.1111/risa.14072](https://doi.org/10.1111/risa.14072)

Provided by University of Otago

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