CONSUMER ATTITUDES TOWARDS FOOD IRRADIATION

Summary

1. The results of consumer attitude studies around the world indicate consumers will accept irradiated foods. Varying levels of understanding exist among the food industry and consumers, but wherever it has been made commercially available to the public food treated with irradiation has generally been accepted. There are numerous practical commercial examples of consumers buying irradiated food around the world, including trade of irradiated mangoes between Australia and New Zealand.

2. Despite the fact food irradiation has been around for more than 50 years, there are varying levels of understanding of the technology among the food industry and consumers. Essentially, food irradiation is a processing technology where products are exposed to a source of ionising energy. Extensive research has shown when this energy is applied to food it is very effective at killing or sterilising insects, bacteria, micro-organisms and other pathogens while having minimal impact on the composition of the food.

3. Generally, consumers are not as welcoming of the application new technologies to food production as they are in other areas. Consistent with this attitude, consumers can tend to be uncertain and wary of food irradiation when first introduced to the technology. This is usually due to questions about product safety and quality derived from the mistaken association of the technology with radioactivity. Nonetheless, where there are clear benefits to them as consumers – particularly in terms of food safety, quality and price – people tend to be positive towards food irradiation.

4. The commercial reality is the consumption of irradiated food products is growing around the worldwide with more than 50 countries having now approved the use of the technology in elements of their food production chains.

5. In Australia, the application of this technology is currently fairly narrow due to a history of regulatory restrictions. However, as Australian and New Zealand regulatory authorities grant approval of irradiation predominantly as a means to manage insect pests the use of irradiation is increasingly common. One example of the consumer and retailer acceptance of irradiated products is the growing market for irradiated Australian tropical fruits in New Zealand.

Consumer studies

6. The International Consultative Group on Food Irradiation (ICGFI) of the Food and Agriculture Organisation and the International Atomic Energy Agency has concluded when “irradiated foods are made available for purchase, most people buy without hesitation.” The ICGFI identified some popular consumer benefits with irradiation include increased availability of high quality food products and greater microbiological safety.1

7. Similarly a report commissioned by the Horticulture Australia Limited found: “Where appropriate information has been disseminated, consumers are quite accepting that irradiation can provide them with worthwhile benefits and their purchasing patterns are surprisingly positive.”2

8. Alongside these findings of commercial acceptance, consumer studies have found some negative attitudes towards irradiation. The main reasons given for reluctance to embrace food irradiation are concerns over the safety of irradiated foods and uncertainty over the benefits of the technology. Much of the literature highlights these views are not necessarily deep-seated and are probably related to some of the negative connotations that the term ‘irradiation’ elicits.3

9. Studies have also shown consumers are less concerned about the use of food irradiation than other food processing technologies. In studies of consumers in North America, the number of people reporting concerns about irradiated food is among the lowest for food issues, comparable to levels of concern about mainstream processes such as food additives and preservatives. In one study carried out in the United States, only around one per cent of people surveyed mentioned irradiation when asked unprompted what food safety issues they felt concerned about.4

10. There is evidence to suggest there is a downward trend in the number of consumers concerned about the safety of irradiated food. A number of the reviewed articles have found public concern over food irradiation is decreasing and people have become more willing to buy irradiated food.5

11. The views of the public on food irradiation also appear to vary depending on the type of food. Consumer research has found irradiation is perceived as more appropriate for particular foods than others. For example, American consumers have demonstrated greater willingness to accept the irradiation of fruit and vegetables than the irradiation of meat. At the same time, some consumers do not associate irradiation with freshness in food.6

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1 International Consultative Group on Food Irradiation, Consumer Attitudes and Market Response to Irradiated Food, 1999
3 S. He, S. Fletcher, and A. Rimal, ‘Attitudes, acceptance, and consumption: The case of beef irradiation’, Journal of Food Distribution Research, 2005
4 J. Fox, C. Bruhn, C. and S. Sapp, ‘Consumer acceptance of irradiated meats’ in N. Hooker and E. Murano, (eds.), Interdisciplinary Food Safety Research, 2001
12. The literature on consumer responses to food irradiation in Australia and New Zealand specifically is fairly limited. In a representative study of Australian and New Zealand consumers commissioned by Food Safety Australia and New Zealand (FSANZ), 13 per cent of Australian respondents expressed concern about the irradiation of food or food ingredients. Similar to international studies, consumers were generally far more concerned about issues relating to food poisoning, imported foods and fat content than irradiation.7

13. The most recent local survey found 60 per cent of Australians and 68 per cent of New Zealanders were aware of the term food irradiation, although support for the technology was below the levels of awareness. In this survey, when consumers were provided with a scenario and background information where irradiation was one method for removing insect pests from tropical fruits, 45 per cent of Australians (and 56 per cent of New Zealanders) selected irradiation as their preferred treatment option, compared to 22 per cent for heat treatment and eight per cent for chemical fumigation.8

14. This finding in relation to tropical fruits in Australia is consistent with other findings worldwide which demonstrate that consumers are receptive to irradiated food and will even select it in preference to a non-irradiated equivalent when they receive balanced information and perceive benefit. For example, field experiments have demonstrated that positive factual information about irradiation made consumers more willing to purchase and consume irradiation food. As such, increasing the dissemination of information may be crucial to the promotion of food irradiation.9

Commercial acceptance

15. Research that suggests people are willing to purchase irradiated food despite some consumer uncertainty around the technology is supported by the growing volumes of food actually being treated with irradiation.

16. Irradiation is approved for use on food products in more than 50 countries and it is increasingly popular. In 2005, it was estimated that around 500,000 tonnes of food was irradiated worldwide and this figure could be as high as one million tonnes today as the use of the technology is growing, especially in China, Vietnam and other developing countries looking to improve their food safety performance.

17. At least 35 countries have approved irradiation treatment of some fresh fruits and vegetables. Several countries, including the United States and the United Kingdom, have approved irradiation of fruit and vegetables as a food class (that is all fruit and vegetables can be irradiated) for quarantine purposes and/or to extend shelf life.

18. In Australia, irradiation is approved for the treatment of herbs, spices and some herbal teas. There is also regulatory approval for a number of tropical fruits (such as mango, papaya, rambutan and litchi) in order to help control pests, in particular fruit fly.

19. The availability of irradiation as a phytosanitary measure has opened up trade between Australia and New Zealand in mangoes, papaya and litchis. Growing volumes of irradiated tropical fruit are now successfully being sold in New Zealand, a market that was previously shut to the horticulture industry in northern Australia due to quarantine restrictions on fruit fly host material. In 2010, this trade in Australian irradiated fruit totalled more than the one thousand tonnes and New Zealand now accounts for more than 25 per cent of total Australian mango exports.

20. The consumer and retailer acceptance of irradiated mangoes in New Zealand is high. Irradiated mangoes are now considered a mainstream product sold successfully in supermarkets and other fresh produce retail channels. Food irradiation has given New Zealand consumers choice in tropical fruits where previously they had relied on often lower quality produce originating from Central and South America.

21. As per FSANZ requirements the irradiated mangoes are sold in New Zealand with labels identifying they have been treated with ionising radiation. They are sold alongside non-irradiated products from other origins. The irradiated Australian mangoes are generally priced at a premium in New Zealand over the other origin product. According to the trade, the growth in Australian mangoes is based on consumers seeking a higher quality product and possibly greater confidence in the food safety origins of fresh produce originating from Australia.

22. The success of the export of Australian irradiated tropical fruits to New Zealand confirms consumers are willing to purchase irradiated foods, particularly when it offers an advantage to them such as product quality and chemical residue free status. It also highlights the commercial opportunities offered by food irradiation for the Australian horticulture sector.

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7 TNS Social Research, Consumer Attitudes Survey, 2007 as quoted in Food Standards Australia New Zealand, Summary of available literature on consumers and food irradiation, 2011

8 J. Gamble, R. Harker and A. Gunson, New Zealand and Australian perceptions of irradiated food: A report to the Horticulture and Food Research Institute of New Zealand and Horticulture Australia Limited, 2002

9 Ioannis Arvanitoyannis, Irradiation of Food Commodities, 2010, and D. Hayes, J. Fox, and J. Shogren, ‘Experts and activists: how information affects the demand for food irradiation’, Food Policy, 2002