

Chapter 16

A Consumer Survey Approach to Reputation-Based Damage Affecting Agricultural Products and How to Overcome It

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Abstract In this chapter we elucidated the changes in consumers' feelings of safety and reassurance and the effectiveness of safety-related PR and events to support the recovery. The new knowledge presented in this chapter can be summarized as follows. According to the results, the effective ways to overcome reputation-based damage relating to agricultural products produced in irradiated areas are (a) provide accurate information on radioactive contamination (dispel ambiguity); (b) use methods that come as close as possible to testing every bag of produce, and require that agricultural products shipped to the market contain no radionuclide detectable using standard detectors (reduce importance); and (c) secure supporters by holding events to support the recovery efforts in disaster zones. It is, moreover, important to implement such initiatives on a continuous basis.

Keywords Reputation • Radioactivity testing methods • Radiation limits • PR activities

16.1 What Is Reputation-Based Damage?

On the surface it would appear that the extreme aversion to agricultural products from Fukushima Prefecture witnessed in the aftermath of the nuclear disaster has waned, but in reality the damage resulting from negative reputation has not really

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abated. Agricultural products from Fukushima fetch only low prices within the market, and even if supermarkets sell such products, they always take the precaution of stocking alternative products from other areas. The fact remains, therefore, that even if Fukushima produce meets safety-related criteria, there are still consumers who shun it.

Although reputation-based damage is defined in a number of ways, Sekiya (2003) defines it as “economic damage due to disrupted consumption or tourism as a result of people viewing foods, products, and localities once deemed safe as being dangerous because of widespread media coverage of an incident, an accident, environmental pollution, or a disaster.” The American psychologists Allport and Postman (Satou 2004) define aggregate reputation-based damage as the importance multiplied by the ambiguity, where importance is assessed in terms of the effect on risk to life whereas ambiguity is assessed in terms of the credibility of information provided.

In this chapter, we assess the current level of reputation-based damage according to consumer sentiment regarding the safety of agricultural products since the radioactive contamination. We also evaluate potential methods of overcoming this problem. We use the results of our consumer survey to report on three issues in particular: (1) whether consumer awareness regarding the safety of agricultural products has changed 2 years after the disaster, (2) whether the prefectural authority’s testing of every bag of produce is effective, and whether the radiation limits and inspection methods used to ensure safety are considered credible, and (3) the benefits derived from events to support recovery, as well as PR activities promoting the safety of Fukushima’s agricultural products.

16.2 Consumer Sentiment with Regard to Reputation, Radioactivity Testing Methods, and Credibility of Information Provided

16.2.1 Overview of Radioactive Content Limits and Consumer Survey

New limits for radioactive cesium content in foods were put in place in April 2012. The new criteria reduce the five food categories used previously to four, namely, general foods, infant food products, milk and dairy products, and drinking water. They are also more stringent than the previous limits. Yet, despite the fact that the Japanese limits are lower than those set by international institutions, the EU, and the United States, Japanese consumers continue to harbor concerns over food safety (Table 16.1).

In December 2011 we conducted consumer surveys of 200 visitors each at two farmers’ markets, one in Kanagawa Prefecture’s Ashigara region and one in Fukushima Prefecture’s Aizu region. Subsequently, in 2012, we administered two more surveys, one targeting approximately 200 people who attended the “Agricultural

Table 16.1 Comparison of limits for radioactive cesium content in agricultural and food products between Japan and the rest of the world (in Bq/kg)

	Japan (old limit)	Japan (new limit)	Codex Alimentarius Commission	EU	USA
Limits (radioactive cesium)	Drinking water 200	Drinking water 10	Foods (except infant food products) 1,000	Drinking water 1,000	1,200
	Milk and dairy products 200	Milk and dairy products 50		Dairy products 1,000	
	Vegetables 500	Infant food products 50	Infant food products 1,000	Infant food products 400	
	Grain 500	General foods 100		Other food products 1,250	
	Meat, egg, fish etc. 500				
Concept of limit setting	The radiation dose is 5 Sv or less per year	The radiation dose is 1 Sv or less per year (assume that 50 % of general foods, 100 % of milk and dairy products and infant food products are polluted)	The radiation dose is 1 Sv or less per year (assume that 10 % of food products are polluted)	The radiation dose is 1 Sv or less per year (assume that 10 % of food products are polluted)	The radiation dose is 5 Sv or less per year (assume that 30 % of food products are polluted)

Source: Compiled based on materials from the Agriculture, Forestry and Fisheries Department of Fukushima Prefecture
Unit is Bq/kg

Table 16.2 Attributes of respondents

		2011		2012	
		Fukushima “Aizu farmers’ markets” (<i>n</i> = 216)	Kanagawa “Ashigara farmers’ markets” (<i>n</i> = 242)	Reconstruction Aid Event “Fukushima and Tohoku Festival” (<i>n</i> = 48)	General Farming Event “Agricultural Frontier” (<i>n</i> = 181)
Sex	Male	13.9	28.1	52.1	47.0
	Female	86.1	63.2	47.9	53.0
	No response	–	8.7	–	–
Age (years)	19 or less	–	2.1	–	3.3
	20–29	6.5	5.8	16.7	8.3
	30–39	5.6	12.4	22.9	17.1
	40–49	16.7	17.8	29.2	27.6
	50–59	27.8	18.2	18.8	9.4
	60–69	27.8	27.3	6.3	9.4
	Over 70	13.9	14.0	4.2	7.2
	No response	1.9	2.5	2.1	17.7
Child	With child(ren)	34.7	48.8	27.1	63.0
	No child	65.3	51.2	72.9	37.0

Source: Created from survey by authors

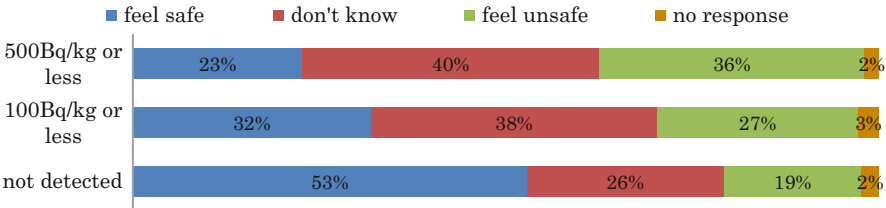
Notes: Figures in the table refer to percentages

Frontier 2012” fair and the other targeting 48 people who attended the Fukushima and Tohoku Festival, an event organized to support the recovery. The two latter events were held in Tokyo from the end of October to December 2012. The surveys addressed how consumer sentiment with regard to radioactivity testing methods had changed since immediately after the disaster. Table 16.2 shows the distribution of the respondents in terms of attributes.

16.2.2 Characteristics of Consumer Sentiment Immediately After the Disaster (2011)

In our 2011 surveys we questioned residents in Kanagawa Prefecture’s Ashigara region and Fukushima Prefecture’s Aizu region on their opinions with regard to different limits for radionuclide in agricultural products [500 Bq/kg or less, 100 Bq/kg or less, and not detectable (ND) using standard detection devices]. About 40 % to 50 % of the respondents replied that they could not decide if they were reassured by the provisional limits of 500 and 100 Bq/kg that were applied during the first year after the disaster. Because the meaning of the term “provisional limit” had not been explained clearly to consumers in the aftermath of the disaster, they could not judge whether the limits were safe, and doubts about the credibility of the actual figures used for the thresholds were also observed. Although lowering the radioactive

<Fukushima Prefecture Residents>



<Kanagawa Prefecture Residents>

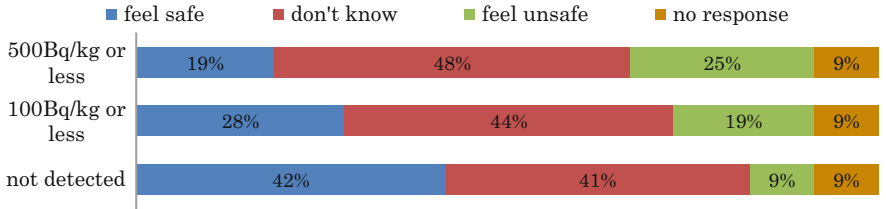


Fig. 16.1 Consumer sentiment toward radioactive content limits for agricultural products (2011)
(From survey by authors)

Table 16.3 Consumer sentiment toward radioactive content limits for agricultural products by gender

	Male			Female		
	500 Bq/kg or less (%)	100 Bq/kg or less (%)	Not detected (%)	500 Bq/kg or less (%)	100 Bq/kg or less (%)	Not detected (%)
Feel safe	16	34	51	16	24	40
Don't know	43	40	35	47	46	41
Feel unsafe	35	22	7	25	19	10
No response	6	4	6	12	12	10

Source: Created from survey by authors

content limit for agricultural products from the provisional limit of 500–100 Bq/kg could potentially make consumers feel somewhat safer, nearly one in four consumers replied that they felt anxious about a 100 Bq/kg threshold as well. Furthermore, about 40 % to 50 % replied that they would only feel reassured if the limit were set at the ND level, indicating that a sense of anxiety from lack of appropriate information had aggravated the reputation-based damage. These results indicate that when information lacking in credibility is provided, there is greater ambiguity and significantly greater reputation-based damage (Fig. 16.1).

Considering the results by parental status-based attributes, the cohort of parents with younger children had a higher tendency to feel reassured if radionuclides were not detectable, indicating that most of them were seeking a more stringent criterion. Among the other groups, many replied that they could not decide what they felt about the different limits, indicating feelings of ambiguity over safety (Tables 16.3, 16.4, 16.5).

Table 16.4 Consumer sentiment toward radioactive content limits for agricultural products by age group (%)

	Youth				Middle-aged group				Senior		
	500 Bq/kg or less	100 Bq/kg or less	Not detected	500 Bq/kg or less	100 Bq/kg or less	Not detected	500 Bq/kg or less	100 Bq/kg or less	500 Bq/kg or less	100 Bq/kg or less	Not detected
Feel safe	18	35	47	18	30	41	14	22	14	22	43
Don't know	41	35	37	44	39	38	49	49	49	49	38
Feel unsafe	37	24	12	30	24	14	22	14	22	14	5
No response	4	6	4	8	7	7	15	15	15	15	14

Source: Created from survey by authors

Table 16.5 Consumer sentiment toward radioactive content limits for agricultural products by parental status

	With Child(ren) (elementary school)				With child(ren) (junior high school)				No child(ren)			
	500 Bq/kg or less (%)	100 Bq/kg or less (%)	Not detected (%)		500 Bq/kg or less (%)	100 Bq/kg or less (%)	Not detected (%)		500 Bq/kg or less (%)	100 Bq/kg or less (%)		Not detected (%)
Feel safe	15	25	52		19	25	36		17	31		43
Don't know	35	29	29		47	44	42		47	44		38
Feel unsafe	40	33	10		22	17	11		25	15		9
No response	10	13	8		11	14	11		11	10		10

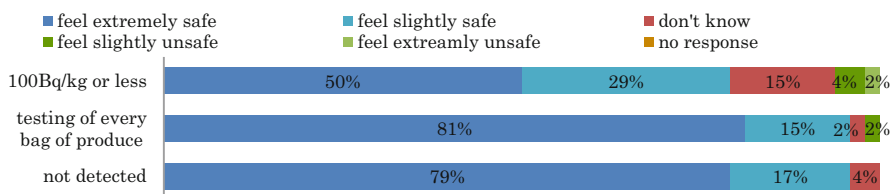
Source: Created from survey by authors

16.2.3 *Characteristics of Consumer Sentiment One and a Half Years After the Disaster (2012)*

According to the 2012 surveys, visitors to the agricultural fair (general consumers) expressed generally less positive sentiment than participants in the event to support recovery (recovery supporters) with regard to all three criteria they were asked to evaluate (a radioactivity limit of 100 Bq/kg or less, testing of every bag of produce, and a radioactivity limit at the ND level). However, more than 70 % of both types of consumers replied that they felt reassured to some degree by all three criteria. Nevertheless, among general consumers, there was a drop-off in feelings of reassurance with regard to the 100 Bq/kg limit, with 9 % replying that it made them feel slightly anxious and another 1 % replying that it made them feel extremely anxious. Overall, however, compared to the 2011 surveys, the 2012 surveys showed a heightened sense of reassurance with regard to the 100 Bq/kg and ND limits. It is evident, therefore, that nearly 2 years after the Great East Japan Earthquake and ensuing nuclear disaster, more consumers were aware of the facts regarding the safety of different levels of radionuclides, and provision of information regarding radioactive contamination was reducing their feelings of ambiguity. Consumers reported feeling most reassured by a radioactive content limit of ND, followed by testing of every bag, and then by a limit of 100 Bq/kg or less, the criterion for shipment currently set by the government (Fig. 16.2).

When residents of the Ashigara region in Kanagawa Prefecture were surveyed on how to assuage anxiety with regard to radionuclides, the most popular response, cited by 32 % of respondents, was that factually accurate media reporting would

<Reconstruction aid event: Reconstruction supporter>



<General farming event: General consumer>

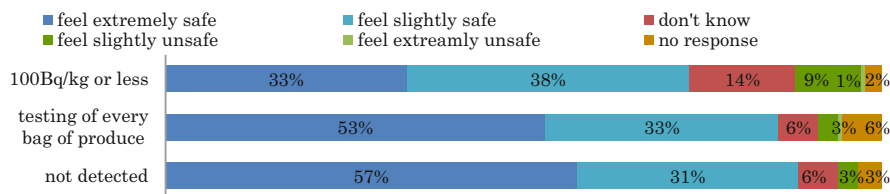


Fig. 16.2 Consumer sentiment toward radioactive content limits and testing method for agricultural products (2012) (From survey by authors)

Table 16.6 Survey results on ways to assuage anxiety regarding radionuclides

Ways to assuage anxiety regarding radioactive substances	Percentage
Factually accurate media reporting	31.9
Easy for consumers to obtain safety-related information	22.2
Testing of every bag of produce	21.5
Maintaining transparency with regard to distribution and the identities of producers	12.5
Others	4.2
No response	7.6

Source: Created from survey by authors

reduce anxiety, followed by 22 % who cited testing of every bag of produce, and another 22 % who replied that making it easy for consumers to obtain safety-related information would help mitigate the anxiety. In addition, 12 % replied that maintaining transparency with regard to distribution and the identities of producers would be useful (Table 16.6). These results indicate that accurate reporting by the media helps assuage anxiety and enhances consumers’ feelings of reassurance regarding radionuclides; in other words, provision of appropriate information is indispensable in overcoming reputation-based damage.

16.3 Effectiveness of PR Activities and Events to Support Fukushima’s Recovery

In this section we evaluate the benefits of PR activities and events to support recovery in Fukushima, both of which serve as a means of providing appropriate information. Figures 16.3, 16.4, and 16.5 show the results of the 2012 surveys of consumer attitudes toward purchasing agricultural products from Fukushima Prefecture, targeting visitors to the agricultural fair and the event to support recovery. Consumers were given a choice of five potential responses: “I don’t mind where products come from,” “I buy Fukushima products to support the recovery effort,” “I prefer to buy products from other areas if the price is the same,” “I buy Fukushima products if they are cheap,” and “I never buy Fukushima products.” The results indicate that 36 % of the consumers surveyed did not avoid buying products just because they came from Fukushima. In addition, 25 % would buy Fukushima products to support the recovery effort, suggesting that the tendency to avoid agricultural products and other foods from Fukushima had abated since immediately after the disaster. However, the percentages of consumers who never bought Fukushima products, or would buy them only if they were cheap, were 1 % and 24 %, respectively. If we include those who would prefer to buy products from other areas if the price was the same, it is apparent that close to 40 % of the consumers surveyed viewed agricultural products from Fukushima in a different light from products from other areas, indicating that a negative reputation still remained. Another notable finding of the

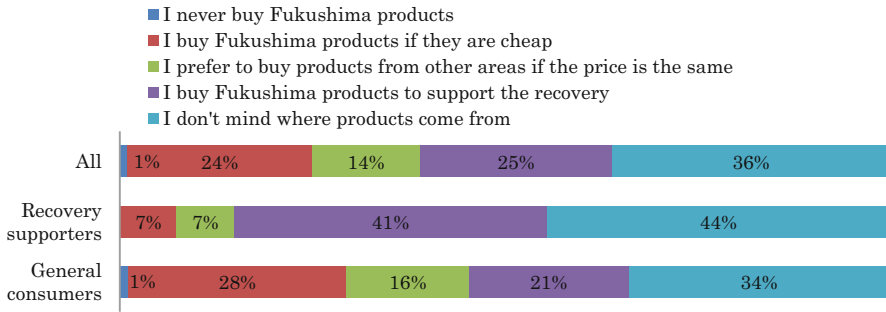


Fig. 16.3 Consumer attitudes toward buying agricultural products from Fukushima (From survey by authors)

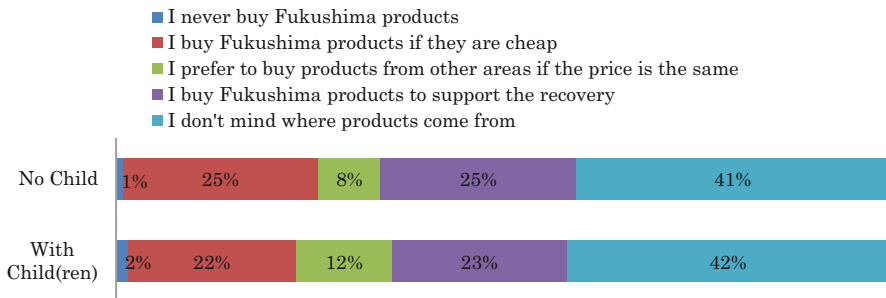


Fig. 16.4 Consumer attitudes toward buying agricultural products from Fukushima by parental status (From survey by authors)

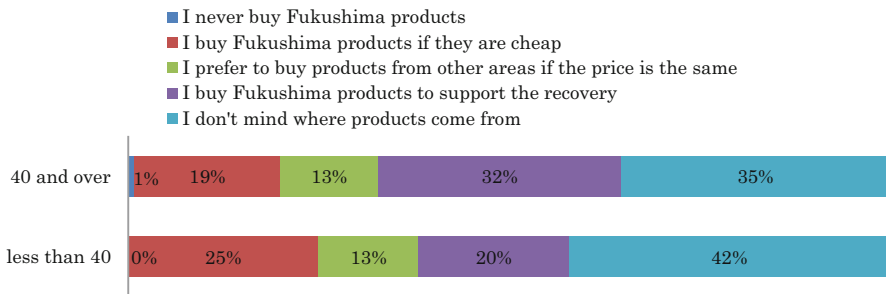


Fig. 16.5 Consumer attitudes toward buying agricultural products from Fukushima by age group (From survey by authors)

surveys was the large number of recovery supporters who replied that they did not mind where products were from, or that they would buy Fukushima products to support the recovery, indicating that securing supporters through PR activities and events to support recovery is effective in overcoming reputation-based damage.

The foregoing results indicate that support for recovery and PR activities may be effective in overcoming reputation-based damage.

16.4 Ways to Overcome Reputation-Based Damage

In this chapter we reviewed previous research on reputation-based damage and initiatives to combat such damage after the disaster. In addition, we elucidated the changes in consumers' feelings of safety and reassurance and the effectiveness of safety-related PR and events to support the recovery. The new knowledge presented in this chapter can be summarized as follows.

First, 2 years have passed since the Great East Japan Earthquake and the ensuing nuclear disaster, and awareness of the facts regarding the safety of different levels of radionuclides has permeated among consumers. At the same time, provision of relevant information is helping to reduce reputation-based damage resulting from consumers' feelings of ambiguity.

Second, securing a base of consumers who buy products to support the recovery has been another effective method of overcoming reputation-based damage. It will be important to continuously implement events to support the recovery going forward.

Third, consumers with children were unable to dispel their anxiety with regard to radioactivity at the 100 Bq/kg level, suggesting the need for more stringent criteria such as setting the level at ND, and testing every bag of produce.

These results indicate that there are effective ways to overcome reputation-based damage relating to agricultural products produced in irradiated areas: (a) provide accurate information on radioactive contamination (dispel ambiguity); (b) use methods that come as close as possible to testing every bag of produce, and require that agricultural products shipped to the market contain no radionuclide detectable using standard detectors (reduce importance); and (c) secure supporters by holding events to support the recovery efforts in disaster zones. It is, moreover, important to implement such initiatives on a continuous basis.

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