

Draft

## Farming after the Fukushima accident: a feminist political ecology analysis of organic agriculture

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### 1. Introduction

On March 11, 2011 (hereafter 3.11), a magnitude nine earthquake hit the northeast part of Japan's main island. The earthquake and subsequent tsunami damaged the cooling systems of the Fukushima No. 1 plant's reactors operated by Tokyo Electric Company (TEPCO). Ranked seven (the most severe) on a seven-step scale by the International Atomic Energy Agency, comparable to the Chernobyl accident in 1986, the accident resulted in the release of radioactive particles, including 15,000 Bq of radioactive cesium 137.<sup>1</sup>

The accident has had strong impacts on rural communities. The northeastern region is Japan's "breadbasket," so to speak. For instance, before the accident, Fukushima prefecture was ranked seventh among the prefectures in terms of agricultural output. It was a major producer of Japan's staple crop, rice (fourth highest producing prefecture), but also of other vegetables and fruits, such as cucumbers (fourth highest), peaches (second), and pears (third) (Ministry of Agriculture, Forestry, and Fisheries, 2012a).

Natural resource dependent communities in rural areas are arguably more vulnerable to radiation contamination than urban communities, as the basis for their livelihood—natural resources—can be directly destroyed by contamination and they cannot simply pack up and move to an uncontaminated place. Nonetheless, in rural sociology, there are surprisingly few studies that deal with social impacts on rural communities in the case of nuclear accidents. Studies of major nuclear accidents—Three Mile Island and Chernobyl—have tended to focus on social movements that were more urban-based (Walsh, 1981), government reactions and policy responses (Petryna, 2002), and/or the analysis of risk perception and attitudes to nuclear power (Peters et al., 1990) without specific attention to rural communities (there are, however, exceptions such as Wynne, 1992).

This article contributes to filling this lacuna by examining 3.11's impacts on organic farmers in Fukushima. This is a part of a bigger study that explores 3.11's impact on food justice in Japan. In this article, we focus on organic farmers, as there are several reasons to suspect that they may be particularly vulnerable to nuclear accidents. For instance, nutrient management by organic farmers differs from that of conventional farmers in that they tend to use crop residues and manure rather than synthetic fertilizers manufactured off-farm. In the case of nuclear contamination, such practices could intensify the accumulation of radioactive materials and farmer exposure. Furthermore, organic consumers tend to be more health and safety conscious (Padel and Foster, 2005; Yiridoe et al., 2005); hence organic farmers might suffer from bigger losses of customers who are concerned about the possibility of contamination.

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<sup>1</sup> Becquerel (Bq) measures radiation emitted by a radioactive material.

Studies of disasters, albeit a majority of them not focused on nuclear accidents, have suggested that the differing interpretations of risk are central to social fractures experienced by the affected communities. Wynne's study of sheep farmers (1992) also pointed out the importance of the politics of knowledge claims in the aftermath of the Chernobyl accident. In this paper, we analyze such negotiations over competing interpretations of radiation risk. Three questions are central to this paper: first, what were the different understandings of radiation risk? Second, what influenced the creation of these differences? And finally, when different views about risks circulate, whose views become the "right" answer and whose get sidelined?

In answering these questions, we draw on feminist political ecology (FPE) as a framework. While typical explanations of the social impacts of nuclear accidents on organic farmers might focus on the localized divergence in risk perceptions among farmers, FPE allows a more complex discussion through political, economic, and gender analyses. This is because FPE integrates social schisms at the local level to a larger political economy, and keys our attention to gender roles and identities in shaping disaster responses. FPE also pays attention to the agency of people in resource dependent communities. These three advantages, we argue, are critical in analyzing rural struggles in the aftermath of a nuclear disaster.

The paper is structured as follows. First, we draw on interviews with organic farmers to delineate their experiences of social tensions after the accident. The second section situates the local struggles in a larger political context, and examines the hegemonic discourse that was promulgated by the government, mainstream media and pro-nuclear experts. The third section examines agency of organic farmers by examining different social mobilizations.

The gendered effects of disasters are well known. But disaster studies have tended to focus on morbidity and mortality of women and less on complicated impacts of gendered subjectivities and norms. This paper's contribution is to apply FPE to draw out gendered processes of negotiations over risk interpretations beyond simply making women a fixed category with inherent vulnerability. FPE does not isolate local struggles from political discourses. It allows us to account for women's agency rather than assuming that they are powerless victims.

## **2. Nuclear accidents and farming: the feminist political ecology approach**

Little has been written on the impacts of radiation contamination on rural communities from social science perspectives. Within the social sciences, there are studies on Chernobyl from psychological (Weisæth, 1991), anthropological (Petryna, 2002), and historical (Marple, 1996) perspectives, but rural areas do not receive particular attention in them. Much analysis on Chernobyl's impact on agriculture has focused on technical and economic aspects (see, for instance, Fesenko et al., 2006). Other analyses include studies of marketing bans of certain items such as the ban on food import placed by the UK government (Kerr et al., 1992) and technical analysis of radiation contamination of food (Shandala et al., 2009). Besides the agrochemical and policy-oriented research, there are few studies on socio-cultural impacts of nuclear reactor accidents focused on rural communities.

This is despite the fact that nuclear radiation has posed a significant threat to agriculture globally. A single accident in Chernobyl contaminated 29,400 km<sup>2</sup> and the one in Fukushima contaminated 3,000 km<sup>2</sup> (Sato et al., 2012), and the contamination will last for a long time. Furthermore, these will probably, and unfortunately, not be the last nuclear threats to rural communities. While some countries, such as Germany, have decided to phase out nuclear power, others, such as France and the US, have not changed their pro-nuclear energy policies. For instance, there are 104 reactors in

the US, five more under construction, and more than a dozen under consideration. A number of developing countries including India and China are adopting and promoting nuclear energy.

Disaster studies have suggested the greater vulnerability of rural communities because of their dependence on natural resources (Couch and Kroll-Smith, 1994; Flint and Luloff, 2005). For instance, Picou et al. (1992) analyzed the Exxon Valdez oil spill with particular attention to what they call “renewable resource communities” (RRCs) whose primary cultural, social, and economic existences were based on the use of renewable natural resources. They documented that RRCs suffered more from psychological stress than non-RRCs.

Various studies of disasters (Couch and Kroll-Smith, 1994, 1994; Freudenburg and Jones, 1991; Freudenburg and Pastor, 2005; Kroll-Smith et al., 2002) have shed light on social tensions in communities hit by disasters due to divergent risk perceptions. This paper follows their footsteps in probing different risk perceptions after 3.11. But we also wanted to make sure that a close attention to local conflicts did not obfuscate the link between local and the larger political economy of disasters. The media reports on Fukushima too, have tended to focus on localized struggles of farmers. The local stories without attention to a broader political and policy issues can inadvertently depoliticize the reading of the disaster and its impacts.

We turn to political ecology as a comprehensive framework to analyze nuclear disaster’s impacts on rural communities that can productively combine both macro and micro dynamics of the nuclear disasters. Pioneered by Blaikie and Brookfield (1987), political ecology has provided ways to understand environmental change and the lives of resource dependent communities around the world in a manner that captures extra-local political economic forces (Blaikie, 2008; Bryant, 1998; King, 2010; Walker, 2005; Zimmerer and Bassett, 2003). Specifically, we use insights from feminist political ecology (FPE), as disaster studies and environmental justice literature have amply shown the gendered relationships in resource-dependent communities (Bell and Braun, 2010; Kurtz, 2007; Scott, 2010).

FPE examines power relations within and outside resource dependent communities with particular emphasis on gender inequality (Rocheleau, 1995; Rocheleau et al., 1996). FPE scholars have pointed out the danger of a romanticized notion of community in which local communities are seen as harmonious in social relations and homogenous in livelihood experiences and interests. Such understanding of “community,” they argue, blinds analysts to existing power struggles and marginalization within it. Their findings on gendered access to political, economic, and natural resources and decision making power echoes many feminist rural sociological studies (Bock and Shortall, 2006; Shortall, 2002; Whatmore, 1991; Whatmore et al., 1994). Scholars have found power dynamics permeate between farm men and women in rural households (Sachs, 1983; Tamanoi, 1998; Whatmore, 1991). While gender identities are increasingly diverse (Brandth, 2002), they are still often rooted in traditional gender stereotypes which tended to see women as having a supporting role, while coding farming as masculine. Men tend to be seen as responsible for many important farm decisions (Petrzelka and Marquart-Pyatt, 2011). Some rural families increasingly move away from traditional division of labor (Beach, 2013), but researchers have also found the tenacity of gender ideology even in the case of increasing women’s off-farm employment and declining farm income (Alston and Whittenbury, 2013). We will therefore examine how responses to nuclear disasters might differ even within the same rural community.

Furthermore, FPE complicates the analysis of environmental conflicts by shedding light on gendered knowledge claims (Elmhirst, 2011, p. 129). Disaster studies, too, has moved away from the understanding of risk as a simple actuarial entity with fixed social influence. Scholars have proposed interpretive or ecological-symbolic understandings of risk mediated by socio-cultural processes (Kroll-Smith et al., 1991) and also found that divergent interpretations often result in social schisms (Bogard, 1988; Erikson, 1995; Kroll-Smith and Couch, 1990; Kroll-Smith et al., 2002). In light of findings that women are often more critical of and concerned about radiation contamination (Flynn et al., 1994), it is important to pay attention to divergent understandings of radiation risk within a rural community.

FPE has also emphasized the agency of women in resource dependent communities (Harris, 2006; Mollett, 2010). Nuclear accidents in the past usually have been followed by a surge of anti-nuclear movements around the world (Joppke, 1993; Walsh and Warland, 1983; Walsh, 1988), and it is important that we pay attention to how farmers play a role in them. Female members of rural communities might seem to be at the bottom of the hierarchy, but FPE keys our attention to how women act in disaster situations with capacity and will, albeit within significant constraints.

Recent developments in FPE also includes criticisms of fixed notions of gender in the previous literature, moving to focus on the construction of gendered subjectivities and performances of hegemonic masculinity and femininity. Building upon theories of performativity of gender, FPE scholars have called for the need to examine performance of gender, for instance, by analyzing how the conservation projects are productive of race and gender identities (Sundberg, 2004). Rural sociology has moved in a similar direction, showing, for example, how wildfire preparedness is shaped by the prevailing understandings of masculinity and femininity (Eriksen et al., 2010). In the analysis of nuclear disaster, it is therefore important to pay attention to the interpretation and performance of masculinity and femininity.

### **3. Context: the 3.11 accident and organic farmers**

The nuclear accident, along with the earthquake and the tsunami, inflicted a major blow on Fukushima agriculture. A government survey of farmers in Fukushima in 2011 found that 17,200 out of 50,945 farmers surveyed reported damages from either earthquake, tsunami, or nuclear accidents. The survey also showed a 20% reduction in paddy fields cultivated in 2011 in comparison with the previous year (Ministry of Agriculture, Forestry, and Fisheries, 2011). The impact of the nuclear accident has been felt even longer than that of the earthquake and tsunami. In a follow-up survey by the government in 2012, 7,570 farmers said that they were still unable to farm; of these, the vast majority (96.1%) said that their inability to resume farming was due to the nuclear accident, not the earthquake or tsunami (Ministry of Agriculture, Forestry and Fisheries, 2012a).

The accident not only contaminated the soil and water but also made agriculture a risky business for farmers in Fukushima. The reports of contaminated food resulted in strong consumer concerns about the safety of food from the region. The sales of Fukushima produce declined significantly. Conventionally, Japanese rice farmers sell their rice through the Japan Agricultural Cooperatives (JA). Facing consumer rejection of Fukushima rice, JA was forced to cut its price (Asahi Shinbun Newspaper, 2012), but the sales did not pick up (Fukushima Minpo Newspaper, 2012). Non-rice produce was also hit hard. For instance, peaches had a 49% decline and pears a 38% decline in price in comparison with the previous year. This was despite the fact that 2011 was generally a good year for farmers in Japan, with relatively higher prices of vegetables and fruits (Ouse, 2012).

Japanese organic farms are still a small minority (0.16% of farmland) and their average land size small (1.7 ha), but their popularity and public recognition have increased over the last several decades, particularly with the introduction of a formal certification system by the national government in the 1990s (Katano, 2007).<sup>2</sup> Japanese organic farmers historically have sold through non-conventional routes, particularly via consumer-supported agriculture or *teikei* (Japan Organic Agriculture Association, 2012). But the increasing popularity of organic food has expanded their market to include supermarkets and department stores (Japan Organic Agriculture Association, 2012). Fukushima prefecture was one of the most active prefectures in organic farming. One survey found 456 organic farmers in Fukushima, the second most in the country after Nagano prefecture (MOA Nature Farming Culture Foundation, 2010).

#### 4. Methods

The remainder of this paper has three main sections. The first part describes the experiences of organic farmers in Fukushima, and this part is based on interviews conducted with twelve organic farmers in Fukushima prefecture. Given that a comprehensive list of organic farmers was not available, we relied on snowball sampling to access interviewees. Two interviewees were men and ten were women. We focused on women because of the feminist political ecology insight that women's voices are often marginalized in narratives of local environmental struggles (Rocheleau et al., 1996). Rural sociologists have also pointed to the fact that women's stories are often suppressed in narratives about rural societies (Sachs, 1983; Whatmore et al., 1994). Two of the women interviewed were people who used to be organic farmers but left farming after 3.11. All the farmers grew a combination of rice, vegetables, and fruits. We also examined accounts by organic farmers from Fukushima in books and news reports to supplement our interview data.

In the interviews, we asked about how they viewed the impacts of the 3.11 on their lives, with the objective of clarifying social tensions caused by the disaster. Drawing on feminist methodology, which undergirds feminist political ecology, we paid particular attention to how interviewees themselves understood radiation contamination and its social impacts (Sprague, 2002). Both authors are natives of Japan but neither is a farmer. Although both authors were sensitive to linguistic and cultural cues, the topic of radiation contamination was highly sensitive. We allowed the interviewees to take a lead in shaping the direction of the interviews and did not prepare a fixed set of interview questions. However, all interviewees were willing to share their stories and concerns with the authors. Interviews typically took place at the interviewee's residence and lasted from one to one and a half hours. All interviews were conducted in Japanese. Interview transcripts and textual materials were coded for salient themes, such as schisms with consumers and within family, and different visions for the future of organic farming in the affected areas.

The second section situates the interviewee narratives in a wider context, and the third examines social mobilizations by farmers. The data for these sections are mostly based on news reports and policy documents in addition to interviews with farmers and staff members at organic farmers' organizations, non-profit organizations for rural development, and agricultural cooperatives. These interview and textual materials were analyzed to provide understanding of responses by the government and scientific experts to the accident. We paid attention not only to regulatory and policy decisions by these entities but also to discursive strategies taken by them.

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<sup>2</sup> The precise number of organic farmers is hard to come by. Katano (2007) estimates the number of organic farmers as about 4,600 in Japan, but another survey by a non-profit organization in 2010 estimated the number to be around 12,000 (approximately 0.5% of farmers) (MOA Nature Farming Culture Foundation, 2010).

## **5. Farmer narratives: social tensions on multiple levels**

In this section, we summarize how our interviewees talked about their experiences after 3.11, particularly focusing on the social tensions they described. The farmer narratives suggested profound struggles to make sense of the radiation risk. It is noteworthy that social tensions were described not in terms of between-group contestation that is clearly delineated between, say, pro-environment vs. pro-nuclear, as we might expect in typical environmental conflicts. To be sure, interviewees criticized the government, TEPCO, and affiliated scientists for the accident and their disaster response. However, their stories pointed to a more complicated matrix of differences that were felt to be more troubling and violating of their sense of normalcy and solidarity. Below, we will describe three themes; tensions with consumers, among farmers, and within families.

### **5.1. Tensions with consumers**

Reports of contaminated food made many consumers wary of radiation contamination, and organic farmers struggled with the tarnished reputation of Fukushima produce. Interviewees said that just having the “made in Fukushima” label was enough to deter customers. For instance, a farmer talked about how she had long sold rice to a consumer organization in the western part of Japan but was told that they wanted to cancel their purchase in the fall of 2011, citing the fear of contamination as the reason. Similarly, several farmers talked about how customers who had bought rice directly from them had reduced their purchases, citing the possibility of contamination.

What was most shocking to the farmers was the fact that some consumers saw them as “wrongdoers.” Several interviewees referred to the Shinagawa Declaration issued in September 2011 by grass-roots organizations as an example of such discourse that condemned farmers. The declaration in general demanded the accountability of TEPCO and the government, but also said that “producers have a responsibility to stop producing when there is a possibility of radioactive contamination regardless of the radiation level...Regardless of the contamination level, low-level radioactive waste is harmful to citizens and its provision amounts to assault or preparation for homicide.”<sup>3</sup> From the organic farmers’ point of view, they themselves were victims of the accident and they deserved the same degree of empathy as other victims. However, many consumers who had become sensitive to radiation started to see farmers as a part of the government-led establishment that downplayed the radiation risk.

The shock of this attitude was felt especially strongly by organic farmers who had prided themselves on producing healthy produce and constructing close relationships with consumers. One (female) interviewee sobbed during the interview, saying that “farmers were criticized for just farming in Fukushima. A lot of slander and criticisms.... Never thought to be criticized like that by doing organic farming. People call our vegetables ‘poison.’” Few of the interviewees said that they had faced such direct condemnation from their customers. Yet rejected orders and declining sales at the farmers’ markets in addition to such incidents fueled the sense of disrupted relationships with consumers.

The interviewees’ narratives were filled with a sense of radically different interests between them and consumers. Organic farmers felt that their produce was safe (often warranted, in their view, by the level of radioactive cesium lower than the government standard), while consumers felt the potential of contamination to be too risky. One of the central pillars of Japanese organic agriculture has been

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<sup>3</sup> This is our translation. The text can be found at <http://chikyuzo.net/n/archives/14953>.

mutual support and partnership between consumers and farmers, reflected in the centrality of the concept of *teikei* (literally “cooperation,” and akin to CSA in the US) in its history. Yet the accident rendered such solidarity with consumers fleeting and fragile due to different interpretations of radiation risk.

## 5.2. Leaving and remaining farmers

Subtle tensions could be identified even among organic farmers. Most obvious was the contrast between the farmers who left farming and the farmers who decided to remain in Fukushima. Upon the accident, farmers in Fukushima were faced with the questions of whether to stay or to leave and whether to continue to farm or to stop farming. To be sure, for farmers in the areas designated as mandatory evacuation zones, there was no choice but to leave their land. But for those farmers outside the evacuation zones, there was a lot of confusion—to evacuate or stay? To farm or not farm?

Organic farmers thought long and hard about whether to continue farming in a contaminated landscape. Some of them decided to leave their land and farm elsewhere or to leave agriculture altogether, although we were not able to find the exact numbers of organic farmers who made these choices. We were able to interview two female farmers to interview who had quit farming altogether. One of them had been farming for more than thirty years, producing rice, vegetables, and chicken eggs. She could theoretically have continued farming, but she said that she was farming organically to raise children in a healthy environment and to produce safe food, so the accident undermined these fundamental reasons for her to farm. Asking rhetorically, “with radiation, what’s the point in organic farming?” she underscored the profound impact of the radiation.

Discussing her decision to stop being a farmer, she said that she was “lucky” to be able to leave farming. She had another job that provided some income. She also did not have familial pressure. Land in Japan is more than a piece of property, holding great significance in terms of family lineage and filial piety. Although she was from Fukushima and married to a man from the same area, a situation that might have made it very hard for her to leave agriculture, her in-laws were old and had Alzheimer’s disease. If the older generations of their family were still healthy and active on the farm, she said, any young couple would feel strong pressure to stay in farming.

In contrast to these two, ten interviewees were still farming. When we asked them about the process of choosing to stay or leave, many described it as not a clear decision. They talked about how the initial shock was followed by confusion and uncertainty. The government did not give clear instructions to farmers except when contaminated produce was discovered. Farming was a way of life, and they wanted to farm. One (male) farmer said, “as a farmer, when spring comes, you just cannot sit around and do nothing. It’s the rhythm of life for us.” But beyond farming being their way of life, resuming farming seemed to hold even more importance for farmers in the post 3.11 context. It was a way to restore the sense of stability and continuity that had been severely disrupted by the triple disasters. The shadow of radiation was present, but the radiation contamination was invisible, and the media and the government announcements tended to downplay the radiation risk.

There was no obvious condemnation between people who quit and people who continued to farm. Farmers who quit were understanding of the other side. The interviewee who talked about how lucky she was not to have familial pressure to stay in farming was sharply aware that economic and familial situations often did not allow people to just leave their land. Conversely, people who stayed in farming talked about people who had left in terms of individual choice and action.

However, differences in perception of risk between the two groups were hard to deny. Continuing farmers tended to portray some radiation in food as inevitable and something that should be accepted (although they admitted that it should depend on individual sensitivity to radioactive materials), whereas for farmers who quit, radiation should be avoided as much as possible. So when they talked about the level of cesium in produce, for instance, the first group would talk about *only* 15 Bq/kg being found in their produce (this would be well below the government standard for regular food items at 100 Bq/kg), while the latter group would say that that was not acceptable. FPE also suggests that the patriarchal structure of rural farming communities is an important factor shaping farmers' strategies after the disaster. As we reviewed above, previous research has shown the tight connection between farming and masculinity. Furthermore, the tradition of males inheriting land and family titles might make leaving agriculture harder for men than for women.

### **5.3. Schism within families**

Social tensions were not only experienced between consumers and farmers and among farmers. Farming families also experienced strains among family members. One pattern we heard often in interviews was how grandparents grew vegetables but the younger generations did not want to eat them anymore. For instance, one farmer talked about how his son and daughter-in-law did not want to eat his vegetables anymore, as they worried about the health impacts on their children.

FPE provides insight into the importance of gender in understanding how 3.11 caused tensions in the most intimate human relationships. In general, women seemed to have a greater sense that there was a threat to health, echoing existing studies that have documented a significant gender difference in attitudes towards nuclear power and radiation (Maruyama et al., 1996). For instance, among our interviewees, the three people who underwent Whole Body Counter tests (which measure radioactivity in the human body) were all women, reflecting a gendered concern with radiation risk.

The gendered perception of radiation risk resulted in tensions within communities and families. One interviewee talked about a "disaster divorce." Her daughter had worried about radiation in Fukushima and evacuated for several months. The daughter's husband did not share her belief that the radiation level was dangerous and could not understand why she had to be away for a long time. They finally filed for a divorce. Obviously, divorce was an extreme case, but in general, interviews with women farmers indicated how family relationships were complicated by gender differences in risk perception. When asked about their decision to stay, they made statements such as "Father (*otusan*, referring to the husband) decided to do it (continue farming), so we just followed"; "Mr. X (husband's name) thinks being in a community is important... once you are in, you should not leave casually," placing the locus and power of decision making in their husbands' hands.

One case was particularly telling. A woman farmer and her husband grew rice and vegetables in Fukushima. Given that neither of them was from Fukushima, they had two young children, and her parents had a farm in another prefecture, her family had ample reason to leave Fukushima. During the interview, she started to weep quietly as she talked about their agonizing decision to stay in Fukushima. She politely put it as a joint decision with her husband, but it was clear that her husband had strongly pushed for it (We also heard from others around the couple that the decision was "the husband's."). Although he was not from the village, he now played a critical role in its communal life, particularly in water management. Like many other rural villages in Japan, their village had experienced rapid depopulation and aging, and thus a relatively young couple like them quickly had become essential in the functioning of the rural community. For him, leaving Fukushima meant

abandoning these villagers who had welcomed them into the community and had come to depend upon them. The wife carefully chose her words in the interview and emphasized that the relationship between her and her husband “became stronger,” but her conflicted emotion was clear from the interview.

In summary, two points can be made about the post-nuclear accident’s impact on Fukushima organic farmers. First, rural life after 3.11 was riddled with a sense of broken social ties on multiple levels, including the most intimate relationships within families. The fracture was rooted in divergent interpretations about the risk of radiation. Echoing existing studies and surveys, women seemed to be more concerned with health implications for themselves and families. This is reflected in the schisms between husbands and wives narrated above in relation to how the men tend to view radiation risk as manageable and tolerable.

As many FPE studies point out, women’s concern with radiation should not be considered a result of their greater affinity with nature (Rocheleau et al., 1996).<sup>4</sup> Rather than supposing women are inherently more sensitive to environmental contamination, sociocultural factors need to be considered. For instance, women’s caring roles might sensitize them to take more seriously the threats to body and the environment. Analysis of masculinity is also helpful. Rural masculinity is linked to heroism and bravery, linking men’s bodies to control, strength, and risk rather than dependency, weakness and safety for women (Brandth and Haugen, 2005). The above stories about men not evacuating and not willing to quit agriculture echo studies that highlight men’s unwillingness to confront changing environments due to their heavily-invested subjectivity as breadwinners and the heads of the household (Alston and Kent, 2008). Furthermore, the patrimonial succession of farm households tends to put pressure for male heads of households to stay in farming (Price and Evans, 2009). Furthermore, patrimonial succession of farm households tend to put pressure for male heads of household to stay in farming (Price and Evans, 2009). Rural masculinity is also intimately linked to the men’s subject position of being in control of agricultural resources (Campbell et al., 2006). Such gendered social system binds male heads of household as the protector and successor of farmland and a family name, thereby further complicating the men’s relationships to radiation threats. Recent FPE literature examines the intersectionality of gender with other aspects of social positions such as race and class (Mollett and Faria, 2013). Although we cannot examine in depth in this paper, for instance, age as well as class might also shape farmers’ response to radiation risks.

## **6. Local schisms in a broader context**

The above description points to the crucial importance of divergent interpretations of radiation risk in producing and exacerbating social tensions. These tensions and confusions are not to be considered the result of the ignorance of the farmers or an inevitable consequence of an unexpected accident that involved little-studied substances. Guided by FPE, our analysis now turns to look beyond the local struggles to explore how confusion and discord at the local level was at least partially compounded by national political dynamics.

First, the lack of preparedness for nuclear disasters by the regulatory authorities fueled the local conflicts and confusion. When the accident happened, the standard regulatory tool for food safety—the Food Sanitation Act—did not have standards for radiation contamination of domestic food. That meant that no official standards existed to tell citizens what radiation levels were to be deemed

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<sup>4</sup> See, also debates on ecofeminism such as the recently summary by Gaard (2011).

unacceptable. Embedded in the regulatory framework was the assumption that only imported food could be contaminated by a nuclear reactor accident. To fill this gap, the government had to adopt temporary standards. They decided to refer to the standards found in a document prepared by the Nuclear Safety Commission (NSC) and called them the “provisional regulatory values” (PRVs). However, the PRVs lacked legitimacy because the NSC was seen as part of the pro-nuclear establishment. Citizen organizations and some scientific experts criticized the PRVs for being too lax (Kimura, 2013). Therefore, when food was tested as “safe,” many consumers knew that it was safe only according to the PRVs. The consumer skepticism that farmers encountered, explained in the earlier section, was partly rooted in this structure of food safety assurance that was deficient in terms of trustworthiness and legitimacy (Kimura, 2013).

Second, the government’s decision to manipulate the radiation exposure limit also took part in confounding the local confusion that we observed in the interviews. The pre-3.11 standard for it was set at 1 mSv/year, following the guidelines of the International Commission on Radiological Protection. However, 3.11 made it impossible to sustain this standard. The government decided to refer to ICRP’s emergency standard at 20mSv (Nuclear Safety Commission, 2011).<sup>5</sup> The government and the nuclear industry were quick to start a campaign to portray more than 1 mSv as actually safe. Fukushima prefecture and some medical experts, for instance, publicly said that up to 100 mSv/year was not hazardous to health (Furitsu, 2011). The adherence to the pre-accident 1mSv standard would have evacuated many people in Fukushima who still live there (including some of our interviewees), but the safety propaganda made the evacuation decision an ambiguous one, leaving it up to individuals unless they lived in the narrowly defined mandatory evacuation zone.

Another instance of political manipulation of uncertainty was the lack of government data on farm land contamination. The Ministry of Agriculture, Forestry, and Fisheries (MAFF) did test farm land in Fukushima but only covered a portion of it, 350 sites out of 97,000 farms (Ministry of Agriculture, Forestry and Fisheries, 2012b). This left farmers with tremendous uncertainty because without such data, they could not tell whether their farmland was contaminated and whether farming would be dangerous to consumers and to themselves. The estimate based on a small sample was not useful because even on a single farm, the degree of contamination varied significantly. While more thorough soil testing would have helped to reduce this uncertainty for farmers, there were several reasons why this was not done. There was an apparent shortage of testing equipment. But observers like Koyama and Komatsu (2012) suspected government manipulation because it feared that a more detailed contamination map would be used by farmers to ask for financial compensation. The resultant paucity of data caused great anxiety to farmers as we have seen in the interviews, forcing them to decide whether to farm and where without critical data.

In addition, the performance of gender is also at stake in times of crisis. Like Australian studies on wildfire that found the social construction of men as in charge of crisis management, disaster situations tend to bring out hegemonic gender frameworks, magnifying the stake in a proper performance of hegemonic masculinity (Eriksen et al., 2010). In times of national crisis such as 3.11, hyper masculine responses tended to dominate the government discourse in order to save the nationhood that was perceived to be under dire threat. 3.11 ranked, according to some Japan observers, along the loss of the WW II as major threat to modern statehood of Japan. The nuclear accident in particular, put Japan under scrutiny of the international spectators, with nuclear accidents imminently unfolding for weeks in front of the global eyes. The world, it felt, was closely watching

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<sup>5</sup> mSv means millisieverts. Sieverts measure biological effects of radiation.

how Japan dealt with the crisis. As political scientist of Japan, Robin LeBlanc suggests, a sense of masculine honor traditionally shapes the Japanese political ethos (LeBlanc, 2009). 3.11 required a ‘manly’ response to uphold national dignity and honor.

Hegemonic masculinity emphasizes control and power, among others, as the core virtues (Carrigan et al., 1985), which was manifest in the government’s discourse that followed 3.11. The Fukushima prefectural and the national governments, in collaboration with pro-nuclear experts, emphasized the safety of region and repeatedly underplayed the risk of radiation. Furthermore, they touted that eating of Fukushima produce was a patriotic act to support the devastated area and national reconstruction. The Ministry of Agriculture, Forestry and Fisheries initiated the “Eat to Cheer Up” campaign that encouraged citizens to consume produce from the affected areas as a part of national recovery efforts. Regional interests were also keen in upholding the image of control and normalcy. The governor of Fukushima prefecture, for instance, issued a “safety declaration” that was meant to quell consumer concern, only to be contradicted by the discovery of contaminated rice (Koyama and Komatsu 2012).<sup>6</sup> Undeterred, the Fukushima governor and key national government officials engaged in multiple public media performances of eating Fukushima produce to appeal safety of eating them to consumers.

If masculinity was seen as a helpful quality in crisis management, ‘femininity,’ the opposite, as it was typically understood as emotional and irrational. In post 3.11 Japan, consumer panic over contaminated food was understood in this gendered manner. In describing and prescribing for the consumers avoiding food from the affected region, the government and mainstream media used the concept of “harmful rumors” (*fuhyo bigai*). The concept refers to damages from the decline in sales of products that are regarded as contaminated from radiation. The term implies that there is no basis for the concern and is indeed used to chastise consumers for avoiding purchasing Fukushima produce or even expressing concerns about contamination. The government and mainstream media portrayed *fuhyo bigai* was causing enormous economic damage and that the concern about food safety was tantamount to being anti-farmer and anti- Fukushima, and would jeopardize the national reconstruction efforts.

Feminist scholars have long pointed out that women’s environmental concerns are often described as hysteric and emotional responses, drawing upon the historic marking of women as irrational and weak on techno-scientific issues (Blum, 2008; Brown, 2007; Murphy, 2006; Newman, 2001). The discourse of *fuhyo bigai* also compounded similar dynamics. In Japanese society, women still shoulder a disproportionate amount of the burden in purchasing food and cooking meals. The policy discourse on food tends to hold women accountable for the related issues (Kimura, 2011). Therefore, when the discourse of *fuhyo bigai* chastised irrational consumers, it implicitly blamed women for what were seen as harmful behaviors. One observer was blunt in her criticism of women; Kazuki Matsunaga, a food safety expert, critiqued women for being worried about radiation contamination in food. In her mind, the post 3.11 anxiety about food was caused by women who acted on their ignorance about food safety risk—as she wrote, “after the Fukushima No. 1 reactor accident, it was women, particularly mothers, who were concerned *and confused* about food contamination” (Matsunaga, 2012, our emphasis). Her statement crystalizes how women were

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<sup>6</sup> Subsequent testing did find contamination of Fukushima rice. Of 23,247 farms whose rice was tested in 2011, 13.8% tested above 100 Bq/kg (Yomiuri Shinbun Newspaper, 2011).

considered the problematic source of societal anxiety about food, which then was blamed for hampering national recovery and causing the predicament of farmers.<sup>7</sup>

In sum, this analysis of larger political issues alerts us to the importance of extra-local forces that shaped the local struggles that were narrated in farmer interviews. Situating local tensions in a larger picture, it becomes evident that the farmers' struggle was not only with contamination but with larger political and economic forces. The confusion and divergent interpretations of risk at the local level was compounded by the lack of critical data and safety propaganda. The government, pro-nuclear experts and mainstream media underplayed the radiation risk, chastised people who expressed concerns, and advertised the overall safety of the situation. In this official discourse, the 'correct' interpretation of the radiation threat was to assume safety of food. 'Feminine' concern was censored as irrational and unscientific, while masculinized discourse propounded the heroism and patriotism of people who followed the official pronouncement.

### **7. Agency and mobilizations**

While these political and economic forces shaped local struggles, FPE also alerts us to how farmers were not simply molded by powerful forces. Farmers are active agents, consciously negotiating within the context in which they are embedded. This section describes farmers' engagements with the crisis situation and their negotiations with the dominant masculine discourse of control that denigrated 'feminine' concerns about the body and the environment.

Farmer agency was not monolithic. Different farmers negotiated the safety propaganda in a complex manner. Even among female organic farmers who we might expect a similar response, the gender did not determine their ways of engagement. Some farmers now try to rejuvenate agriculture in the region, organized as Fukushima organic farmers. In contrast, as we mentioned above, some farmers quit farming with the belief that agriculture should not be done in a contaminated landscape, now engaging with politics as anti-nuclear power activists.

For instance, a group of women- including our interviewees- established Fukushima Women Organic Farmer Association in 2012, with the objective of "communicating the reality of Fukushima from women's perspectives." They planned to hold meetings for women farmers to share their struggles, to organize events to promote organic agriculture, and to better communicate with consumers.<sup>8</sup> They were closely related to a group Fukushima Organic Agriculture Network which was established in November 2011. The Network similarly argued that agriculture needed to be supported in the affected areas and that farmers played a critical role in reconstructing the area.

One female farmer's example highlights the core belief of these farmers. A recent graduate of college in the metropolitan area, she decided to come back to Fukushima and to succeed the family business in 2010. Her father owned 2.5 hectare of rice paddies and 1.5 hectare for vegetable production, which he inherited from his father. Her father and mother started to organically farm in the 1970s. The principal workforce of the farm was family labor, sometimes her grandmother helping the work. They sold their produce through various channels including farmers' markets and

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<sup>7</sup> Contrary to the *fuhyo higai* discourse that posited the lack of basis in consumer concern about the food safety, in actuality, the government did not have the means to completely reject the possibility of contamination and/or its health effects (Suzuki, 2012).

<sup>8</sup> From the blog of the Fukushima Organic Farming Network at <http://fukushimayuuki.blog.fc2.com/blog-category-17.html>.

also made processed products such as rice cakes during winter. When the accident happened, she evacuated the area because of the concern with radiation, but came back with a strong determination to keep the family business. In 2011, the radiation level of their farm was about ten times that in Tokyo. While many- including her parents- worried about the radiation's impacts on her health as the reproductive impact on young women was a big societal concern, she continued to work on farm. She established her own company which expanded green tourism on their farm. Furthermore, she became active as a spokesperson for Fukushima agriculture, participating in events and symposiums with civic organizations. In the interview, she said "I am testing what we harvest, and I know that they are rarely contaminated. More than 90% are ok. I understand why other people are worried, but I have the good understanding of the situation and I feel we don't have to be too sensitive." While she condemned the nuclear accident, she tended to emphasize that there was a wide variation in the degree of contamination within Fukushima and much of Fukushima produce was tested and found safe.

Such positions can be contrasted with the concern of farmers who quit farming because they believed that agriculture in Fukushima was no longer sustainable. Farmers' agency can be manifested in the opposite direction. Two women farmers that we interviewed left farming completely with the belief that farmers should not be farming in a contaminated landscape. Their engagement with politics was now through the anti-nuclear movement and litigations against the TEPCO and the government rather than as organic farmers.

This paper does not try to answer the question of what produced these divergent directions in the farmer agency. Rather, we want to go back to the question we posed in the beginning of the paper- whose interpretation of risk prevail when conflicting views abound? On the surface, the (continuing) organic farmers' stance might seem heavily influenced by the government discourse, thus suggesting that it was the risk interpretation by political-economic elites that ultimately prevailed. The Fukushima Organic Farming Network too appealed to consumers to continue buying Fukushima produce and asserted that agriculture was still possible and desirable in the affected region. While their stance might seem to closely ally with the government safety discourse, a closer look reveals that their discourse diverged from the pro-nuclear pronouncement of safety and normalcy. First, rather than obfuscating the uncertainty of science on radiation's impacts on food, they acknowledged the need for more studies and information. They put this concern to action by soliciting help from experts and grass-roots organizations, conducting experiments in collaboration with experts.

They also tried to deepen their relationships with consumers by communicating honestly about their situation, rather than simply asserting that their produce was safe. Similar to many "citizen labs" that emerged all over Japan after the accident, the Network purchased testing equipment and learned how to operate it in order to test their soil and produce. They also set up face-to-face meetings and wrote newsletters to explain their situation directly to consumers. It was through the cultivation of understanding of the profound challenges with consumers that they sought to remedy the consumer avoidance of Fukushima produce, rather than asking consumers to blindly believe in safety of food after the accident.

And finally, the underlying understanding of farming diverges substantially between organic farmers and the dominant safety discourse. The latter emphasized the necessity of revitalizing agriculture primarily as an economic issue; the principal concern of the political and economic elites in upholding the normalcy and chastising the worried consumers was the damage to national economy.

In contrast, what feminist scholars have termed the “ethics of care” shaped the organic farmers’ discourses. This contrast was similar to what Jarosz found in women in alternative agriculture who emphasized the nurturing of nature and community in defiance of the dominant economic logic in industrial agriculture (Jarosz, 2011). While organic farmers were embedded in capitalist economy and hence farming as income generating activity was important, their main emphasis was on caring for the land and the community. If the government discourse predicated that agriculture needed to be supported for the sake of economy, the organic farmer’s discourse argued that agriculture was sacrificed under such logic and all citizens needed to understand the consequences and if possible, to share the burden of farmers.

## **8. Conclusion**

Interviews with Fukushima organic farmers made clear how the nuclear accident created various tensions within rural communities rooted in different interpretations of the dangers from radioactive materials. The divergence in interpretations of radiation risk existed even within the same household, echoing the existing studies on gender differences in attitudes towards nuclear power and radiation.

What shaped the emergence of different interpretations of risk? We discussed how men might have felt more attached to farmland and to farming as occupation and as family tradition in the context of patriarchal Japanese society. Linking local struggles to larger political issues, we also discussed how the government and the mainstream downplayed the risk and provided little data. The political and economic elites emphasized control and normalcy in accordance with hegemonic masculinity, while chastising (mostly female) consumers who avoided buying and eating food from the affected area as irrational and irresponsible. This way, the government and the mainstream media laid the ground for legitimizing a certain view as the “right” response to radiation threats to food; consumers and producers alike were not to worry and risk was to be considered negligible. Therefore, divergent risk interpretations had roots in multiple levels- gendered subjectivity of individual men and women as well as the macro-political discourse that also had gendered dimensions. We do not preclude other possibilities as well. FPE points to the need for intersectional analysis, and future study needs to examine other matrices of power including class and age as other factors.

The article has also highlighted how organic farmers negotiated actively and collectively with divergent interpretations of risks. Here, we found that a singular explanation of the agency of organic farmers was not possible. Some quit farming in their defiance of the safety propaganda and joined forces with social movements for anti-nuclear power and victim compensation. Others organized to revitalize agriculture in the affected areas by networking organic farmers and farmers and consumers. Defying an essentialized view of women, these divergent responses were also present among women organic farmers.

Existing studies of disasters have acknowledged their gendered impacts, but the analysis has tended to focus on women’s increased morbidity and mortality. Overall, our study suggests the utility of FPE in analyzing local risk interpretations and macro political dynamics from feminist perspectives. While gender difference in attitudes to radiation contamination is expected from the existing literature, this study suggests the need to examine how identities and socially constructed notions of masculinity/femininity mediate them.

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