



国際ミニシンポジウム 座長解題
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**Transformation towards Sustainable Agriculture, Rural Communities, and
Ecosystems: Reviewing Global Trends and Local Realities Based on Interdisciplinary
Approaches: Part 2**

Keshav Lall Maharjan^{1)*}, Tadayoshi Masuda²⁾ & Kae Sekine³⁾

1. Welcome Addresses

The 2022 ARAFE International Mini Symposium at the 72nd Annual Meeting started with welcome addresses by Asami Atsuyuki, President of ARAFE and Professor at Kyoto University, and Taniguchi Yoshimitsu, President of the Japanese Society of Organic Agriculture Science (JSOAS) and Professor at Akita Prefectural University. Asami commended a hybrid symposium being held for the first time in three years after the outbreak of the Covid-19 pandemic. Taniguchi referred to the MeaDRI strategy established by the Japanese government and the importance of social science contributions. Both underlined the importance of interdisciplinary approaches to tackle the current socio-economic challenges. Throughout the symposium, Maharjan served as chair and Masuda and Sekine as moderators.

2. Concept of the Symposium

Recently, key issues such as the sustainability of agriculture, rural communities, and ecosystems; food and welfare security of producers, local community, and consumers; agrobiodiversity; and landscape features face significant challenges due to climate change, globalization, urbanization, and environmental degra-

ation. To respond to this crisis of the agri-food system as well as the entire society, the governments, business circle, grassroots farmers, and civil society promote various alternative solutions such as agroecology, farm diversification, climate resilient agriculture, digitalization, and precision agriculture. The global north (e.g., Japan, the US, and EU) declared their short- and long-term strategies to make the current agri-food system ecologically, socially, and economically sustainable since 2019. For example, the UN Food Systems Summit of 2021 was part of these initiatives. However, global farmers and civil society groups firmly contest the way in which these initiatives promote and claim that ecological farming, localized food systems, and the associated traditional knowledge of farmers, including small-scale family farmers and indigenous peoples as the guardians of resource conservation, deserve to be heard and placed in the center of the debate.

To learn from global research trends, this symposium invites three experts of participatory guarantee systems, digital farming and on-farm diversification, and resilience of small-scale farmers to present concepts, related studies, policies, debates, and controversies. These issues build on the last year's topics of agroecology, small-scale farmers and organic farming, and climate smart agriculture. Dwelling on their rich

¹⁾ Graduate School of Humanities and Social Sciences, Hiroshima University

²⁾ Faculty of Agriculture, Kindai University

³⁾ Graduate School of Economics, Aichi Gakuin University

* E-mail: mkeshav@hiroshima-u.ac.jp

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research experiences in different disciplines—sociology of agriculture and food, resource and environmental economics, and development economics—we invite the participants to interdisciplinary debates. This symposium is the second of two consecutive symposia held in 2021 and 2022. In 2021 the focus was on the global trends, and this year is on local realities.

3. Discussions: Comments and Replies

After three paper presentations—Loconto (2023), Metta (2023), and Umetsu and Miura (2023)—Muramoto Joji from the University of California, Nanseki Teruaki from Kyushu University, and Steven McGreevy from Twente University commented on each paper, respectively.

(C1) Comments to Loconto by Muramoto

i) Conventionalization of Organic Agriculture: It is interesting to learn that the “conventionalization” of organic agriculture is happening to some degree in the EU. Now, in the US, a highly debated issue to this issue is the fact that the USDA organic standard accepts soilless hydroponic farming as organic. Is there any move to accept soilless hydroponic farming as organic in the EU?

ii) Go Beyond Organic and Regenerative Agriculture: Your study suggests that although organic is still the main label used in the EU, other assurance systems and labels “go beyond organic” and are partially driven by agroecology. No social element (e.g., farm workers’ welfare) is included in the USDA organic standard. In the US, the term “regenerative agriculture” is gaining popularity, but it has been used in various ways from no-till herbicide applied systems to soil-based, animal-integrated organic farming and causes confusions. Does the EU organic standard include any social element? What is the status of regenerative agriculture in the EU? Is there any standard? Is it growing?

iii) Agroecology: Your study suggests that agroecology is not another model of certification but supports various alternative forms of assurance through agroecological elements and principles. There is a move-

ment away from third-party (Model A) and even participatory guarantee systems (Model D) in favor of social control (Model 0) and digital platforms where consumers can comment (Model C). Were there more PGS farmers in the EU in the past? Would you explain how Model 0 (self-declaration) represents social control? What is the implication of this trend for the future of EU’s food system? How do agro-ecological elements or principles such as a circular and solidarity economy have been included in the current EU agro-food policies? How many universities in the EU have agroecology programs?

(C2) Comments to Metta by Nanseki

i) Important Aspects: “productivism,” “post-productivism,” “specialized farm,” “mixed farm,” “multifunctional farm,” “farming diversification,” “on-farm diversification,” and “off-farm diversification.”

Which are the directions recommended for farmers and society? Many Japanese “farm households” have been already “off-farm” diversified. On-farm diversification may increase risks.

ii) Reasonable and Useful Observations: Diversification is not a panacea and poses additional risks for farmers (e.g., safety for food processing or on-farm spot activities). Even when digitalization can help or replace some of the efforts farmers must make toward these tasks, the questions are: (i) who captures most of the value generated in rural areas; (ii) farmers, platformers, or society; (iii) who is encouraged to challenge digitalization; (iv) all farmers?

(C3) Comments to Umetsu and Miura by McGreevy

i) Your presentation touched on production diversity, dietary diversity, and nutritional diversity and the relationships between these factors. At a first glance, there is a positive relationship between them, but the literature indicates that improving production diversity is not guaranteed to improve nutrition at the household level (Sibhatu and Qaim, 2018; Rosenberg et al., 2018). Access to food, access to markets, ensuring farm household income by reducing risks through diverse production, and consumption practices/food

culture are all reasons why we do not see a positive relationship; but what about Zambia? How does market access and household income impact nutrition levels?

ii) Another issue you raised relates to climate risk reduction and its impact on nutrition goals. In particular, rain-fed, small-holder production is at risk due to climate fluctuations. You argue that sorghum is a viable, climate-resilient alternative to maize and is also healthier and richer in micronutrients than maize. However, maize benefits from several biases—it is seen as healthier than sorghum, the government promotes and subsidizes maize, and birds damaging sorghum crops is a significant deterrent. What do you suspect are the biggest barriers to the widespread adoption of sorghum and why? In an ideal scenario, what factors (e.g., policies, shifts in dietary preference, market mechanisms, severe drought) would impact the adoption of sorghum the most? What are farmers' reactions to the sorghum intervention? Anything interesting to report?

(R1) Reply by Loconto

i) When the US made this decision, there was quite a debate because they revised the EU standard in 2018 for organic agriculture, which came into effect at the beginning of 2022. During that time, there was an even wider debate.

This standard revision, which will stay in place probably for 10 years from now, will be like a new religion for some time. EU has not yet accepted hydroponic farming, as they have maintained the principle of the link to soil in organic agriculture. Only those plants that naturally grow in water are considered organic, such as hyacinth or lotus but nothing hydroponic such as strawberries or lettuce.

There have been also some issues related to trade because of agreement equivalency between the EU and US and Canadian organics. There is still some debate, and they are yet to decide whether it will be imported as equivalent. This will probably come up before they do a review. There might be something new and interesting about that.

ii) Regarding the social element, just like in the US,

JAS organic agriculture is very much focused on technical elements, particularly on no use of agrochemicals, as well as the separation along the supply chain for organic products but due to the poor principles and the very unique production system, there is no social element.

This goes to your second point about regenerative agriculture and also to Beyond Organic. This has left a lot of room for private labels and private standards to emerge, particularly biodynamic ones. We have a number of labels in Europe that have integrated. Worker welfare, fair prices, quality of life, these terms emerged from my analysis as being used specifically by these private labels. There are many of them emerging in each country.

Regenerative agriculture received support from EU Horizon 2020 and Horizon Europe funding as well as debate and support under the European Green Deal. However, Europe is slightly behind the US in that there is only one regenerative agricultural label I know of. It is a private label, Dr. Onars or something. I think it is a German label that focuses on regenerative agriculture. Nonetheless, it is a part of this broader movement beyond organic. When I was interviewing for case studies, particularly in Italy and Germany, they mentioned regenerative agriculture as something that they were using to promote private labels.

iii) Finally, on your last questions about the different models and PGS, PGS started in Japan but also in France with *Nature et Progrès*. In the 1990s, *Nature et Progrès* had around 1,000 farmers as part of its PGS system, which was the largest at the time. Then, it lost many farmers after the introduction of the organic standard and the requirement for third-party certification. As a result, *Nature et Progrès*, who created IFOAM and others such international organic movements, lost the ability to use the term "organic." They maintained their PGS system but lost a lot of farmers. They improved meanwhile but still have slightly fewer farmers than before.

As I mentioned, there are several PGS that have emerged in Spain, Portugal, Italy, or Hungary, but are

not formalized or standardized at the international level by the definition of IFOAM Organics International, whereby you have farmer groups and then you have committees that include consumers, researchers, and the local government. Those models are not so frequent in the EU. This is why I focused on social control.

The model 0 of self-declaration is somewhat fuzzy because you have companies who simply declare “we are doing our own thing, you have to trust us” and that is why it is not considered credible by anyone. There are many farmers who engage in farmer groups in a cooperative, but they are still doing their own self-declarations and there are no external controls.

However, they are relying upon these peer farmer groups to sell together, exchange with each other, which is why I need further clarification of these emerging models because it is incorrect to say that it is a model 0 with only self-declaration, because there are other forms of social control but there is no clear organizational differentiation as in other models, so there is no organizational independence but there are other controls.

The final question is about the implications of these movements and how some agro-ecological principles are being included in EU’s agro-food policy. The farm-to-fork strategy and the new European Green Deal, they have made two rather strong stances on this. One is that they are committing to increasing organic agriculture and trying to get 25% of farmland across Europe certified as organic by the EU organic standards. They are also supporting other approaches to try to achieve sustainability through some Common Agricultural Policy pillars, particularly direct payments under pillar 1 and collective payments under pillar 2.

They have also financed research on labels and adopted several private certification labels for the bio-fuels program, for example, discussing how to reach the zero deforestation requirements using forestry and agroforestry labels that can be considered equivalent.

They really like labels in Europe. There is support for an increasing number of private labels to increase

traceability. There is an entire section in the EU Green Deal that deals with traceability by better labels, better footprints, and better metrics among others.

iv) To respond to a question from the floor, I will go back to the story of what happened with organic products, because organic is complex system with complex concepts and interdependencies. The organic label is the easiest recognized label in the EU.

However, that was part of a very long process of standardization, conventionalization, and reduction of complexity into a set of principles controlled by this layered system. I do not think that agroecology will be any different. I think this is part of the explosion of labels because labels influence consumers. They are recognized by consumers and they transmit some value and some image of a food product. Governments like them because, in a sense, it is a rather simple way to communicate complex messages.

The risk is always that the technical standards behind them are political processes with technical experts and different lobbies trying to ensure that their definition is the one accepted by a public label because, for example, that gives them a comparative advantage in the market. This is part of that conventionalization process and of narrowing down complexity.

Hitherto, agroecology has not started to get behind labels. The reason some of this is happening, particularly in Latin American countries, there is quite a bit of resistance in France right now actually about this, because they do not want to be reduced to a label. They want to maintain these systems where you must speak to someone to understand it not look at a label on a package.

There is the social movement side of agroecology that has been resisting strongly to ‘labelization’ and the standardization of agroecology to maintain markets that allow making changes in food systems rather than just enabling a label to increase the spread and adoption of practices.

There are only two countries in Europe that have policies specifically for “agroecology,” France and

Hungary. The French government is focusing on agroecology to produce, consume, and protect crops differently. They have created a national label called High Environmental Value (HEV), which is considered an agro-ecological label, but is used by the mainstream, not by farmers who would identify themselves as agro-ecological and part of militant agroecology social movements.

You have this battle about the use and co-optation of this name in France that. Therefore, the word itself is also being associated with “peasant agroecology” or “more-than-organic” and other words that people use to maintain the values that of the core system without getting co-opted into easily communicated labels.

(R2) Reply by Metta

i) Regarding the question about the right direction for Japanese agriculture in terms of farming styles, I think Japan is following a similar approach to the EU, where governments leave farmers free to choose their farming style as long as they contribute to different policy objectives and targets, such as increasing the share of organic farming and reducing the use of pesticides or chemical fertilizers. I believe it would be good to accomplish these agreed targets.

However, in my view, we often neglect socio-economic objectives such as increasing the number of farmers engaged in on-farm diversification and the number of agri-food cooperatives, raising the minimum wage for agricultural workers, or increasing the number of female-led enterprises or family farms in rural areas, which are not so high on the political agenda. For instance, the amount of value captured by farmers, needs to increase drastically because it otherwise is squeezed along the supply chain.

Other targets could be the number of young farmers entering agriculture, number of people living in rural areas, and number of diversified farmers. The challenge is to balance a comprehensive set of targets without losing sight of priorities.

Therefore, I am not here to say whether off-farm diversification is bad compared to on-farm diversification or no diversification at all. I think that when farm-

ers go off-farm, off-farm activities can be seen as important for rural areas (e.g., education, mobility), but also as deviating from the rural areas (e.g., working for urban areas or international systems). Any position in this respect is tricky. I think each country should consult its citizens to understand whether the public resources dedicated to food and rural areas should be directed to off-farm farmers, possibly considering all issues at stake (e.g., high dependency on foreign agri-food commodity imports, rural de-population, unemployment rate).

I am tempted to say that we need to diversify more in terms of on-farm diversification because the share of these farmers is minor and they usually fulfill many goals simultaneously (food provision, organic production, gender equality, rural attractiveness).

However, striving for on-farm diversification just for the sake of diversification is not the ultimate goal. Diversification must ensure that food systems become less vulnerable and people live well in the countryside, between agriculture and the broader society. We should not place further expectations on farmers who are already under stress due to farming. Farmers are already doing many jobs when they “just” produce food, but we could definitely simplify the workload and tasks to make on-farm diversification easier and attractive for their wellbeing and viability.

ii) I encourage researchers to start looking critically at how digitalization can be used for on-farm diversification because there is a lack of even descriptive analyses (e.g., checking how much each platform take value away from agriculture). There are some platforms for food sales in Europe that take from 10% to 23% of each sale transaction. Is this share fair? The answer is complicated because there are many variables to consider (e.g., how much do these platforms increase the likelihood of direct selling; do they position themselves as another intermediary extracting value from agriculture, or are they farmers-owned channels?)

For agro-tourism, platforms such as Booking.com take approximately 15% of each transaction, although

this share can change. This is just a micro-level number for a single transaction. At the macro-level, a country can make decisions such as leaving the digital market open for any platforms to enter this sector of the rural economy. Countries can also tax international platforms' profits or support farmers to create their own cooperatives, with their own online platforms, to capture higher value by themselves.

In conclusion, there are different ways to regulate digital platforms, large gatekeepers, and steer digitalization for rural development in different parts of the world. In a digital and globalized economy, we cannot limit our agri-food, trade, and rural policies based on monetary debate and fair value redistribution as we have done so far. We need to think about data ownership, data control, and the freedom farmers can have to make choices about their farming styles and lives.

(R3) Reply by Umetsu

i) In our survey, our samples include only rural villagers, and we do not compare them with urban residents, so the differences in the level of nutrition between them are unclear. This point must be examined in future work.

It is also not very clear how agricultural income enhance nutrition. For instance, Ramahaimandimby et al. (2022) showed that purchased foods does not appear to increase the overall energy and micronutrient intake. The purchased foods can be sugar, coffee, or cereals, which are not necessarily nutritional, so the link should be further investigated. Overall, it is not a straightforward relationship.

ii) They used to eat more sorghum than maize in the past. However, sorghum was quickly displaced by maize. There is the perception that eating white maize is the symbol of modernization. I think this trend is the same in Japan. Additionally, the market is a problem. Unlike maize, the government does not purchase sorghum from farmers, so the market opportunities for farmers to sell sorghum are limited.

iii) The labor input for preventing bird attacks is significant. During harvest season, a household has to send children or some other family members to

sit beside the sorghum crops and throw stones or other objects. There is also a local variety called *Chiganigani*, which means no children. It has spikes, so the birds cannot eat it, meaning sorghum can be grown without children chasing birds. Overall, the labor burden for preventing bird attacks is high. This may be one reason the farmers pick red sorghum. If he grows red sorghum, it can prevent at least the bird attacks.

The next question is, in an ideal scenario, what factors determine the adoption of sorghum among policies, shifting dietary preferences, and market mechanisms?

In addition to government policies, the perception of a healthier diet, bird attack prevention, and the market for sorghum are vital to sorghum production. If policies address these three issues, that would remove the barriers to sorghum production.

Finally, what is farmers' reaction to sorghum intervention? Maybe Ken can respond to this question and all the previous questions asked in the forum as well.

(R4) Reply by Miura

My reply is based on field observations because Chieko and I have stayed in the field for three weeks during September. We conducted a field experiment that advocated the cultivation of sorghum and distributed either white or red sorghum. Farmers showed high interest in sorghum production, although they retained local seeds. One reason could be that they continue cultivating sorghum seeds with recycled ones. The recycled seeds' productivity is lower, which why they showed interest in our experiment.

Further, the supply constraint is a significant barrier in the local context. This implication relates to the second question because new sorghum seeds are unavailable at local ago-dealer shops. We will examine what happens after relaxing this fundamental supply constraint and explore the value of the red sorghum variety in reducing the labor burdens of sorghum cultivation.

4. Concluding Remarks

Maharjan noted that the issues at hand were well discussed but some need to be elaborated further. In the 2021 symposium, it was shown that land transaction with ownership changes. As such, it is important to inform the farmers and rural communities about the technologies, policies, and governance at international, national, and local levels so that they can make integrated decisions to make mid and long-term plans for conducting sustainable agriculture. Such undertakings must be well evaluated so that they can provide enough income for a decent livelihood. This symposium adds the issues of the choice and use of PGS systems and labelling, use of digital tools and marketing platform, types of diversification, welfare and livelihood of farmers, their decision on-making of the produce, and responsible consumption by citizens as questions for future discussion.

Regarding sustainable agriculture in Japan, Maharjan et al. (2022a) identified several drivers of environmental conservation agriculture (ECA) in Sado Island, Niigata Prefecture, which is one of the first Globally Important Agricultural Heritage System (GIAHS) in Japan. A key aspect of this study was how farmers view their role in improving the local and global environment. Concerted local efforts must be made to ensure farmers feel directly involved in GIAHS activities on Sado Island for GIAHS and ECA to succeed. The GIAHS concept should also be integrated into youth involvement, Sado Island tourism management, and branding, all of which can possibly increase revenue generation. In addition, information dissemination activities should emphasize the ways in which ECA can improve biodiversity and address climate change. For the labeling of ECA products, Maharjan et al. (2021) described how Sado Island farmers receive a premium price for the Toki-mai (Japanese crested ibis rice) branding of their rice, with a portion of the revenue going towards the conservation of Toki birds. The producer association registered the product with the local government office for branding and labeling. The

product is sold through agricultural cooperatives, directly to consumers, and also through digital platforms. According to the authors, a better distribution of the resulting Toki-mai branding through the GIAHS initiative is needed for other local industries in Sado Island, as well as targeting consumers who may be unaware of it. To ensure that GIAHS sites and farmer communities continue to grow, farmers indicated that the Toki-mai branding must be embraced more widely in local industries, such as restaurants, hotels, and supermarkets. In terms of integrating ECA with biodiversity conservation, Maharjan et al. (2022b) reported that Fujioka farmers in Gunma Prefecture can be more motivated to practice ECA if they learn about its climate change mitigation capabilities. They also discussed how this could positively affect the conservation efforts in Fujioka, such as protecting endangered species (e.g., Yaritanago). In summary, these studies argued that it is important to make ECA more sustainable, primarily by finding ways to increase farmer revenue, promoting farmer-consumer market channels and the extension of ECA products to local industries, and emphasizing the effectiveness of ECA for climate change mitigation.

Further, *marché*, an alternative marketing channel expanding in Japan, where producers and consumers can meet face to face, is frequented by consumers who purchase local, fresh, and organic food products (Zollet and Maharjan, 2020). It offers organic farmers the opportunity to reach out to consumers directly and advertise themselves and their produce and traceability to create a long-term relationship. These studies provide clues to exploring the issues raised here in greater depth.

Maharjan concluded that we need a mindset transformation based on sociological imagination for giving value to sustainable agriculture and foods that are good for the environment and humankind.

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