

ARAFE

The Association for Regional Agricultural and Forestry Economics

地域農林経済学会

The 6th International Workshop

第6回 国際ワークショップ

Online via Zoom

オンライン (Zoom)

June 26th, 2022

令和4 (2022) 年6月26日 (日)

10:00 – 17:25 JST

The Association for Regional Agricultural and Forestry Economics

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Workshop Program

Sunday, June 26th, 2021:

10:00 – 10:05 5 min.

Opening remarks by Dr. MAHARJAN, Keshav Lall, ARAFE Board of Internationalization.

10:05 – 10:10 5 min.

Welcome remarks

Dr. ASAMI, Atsuyuki, ARAFE President and Professor, Kyoto University.

10:10 – 12:10 120 min.

Session 1. Overcome Poverty and Increase Income

Session Moderator: Dr. NANSEKI, Teruaki, Kyushu University

Presentation 1.1 by TIZIFA, Tapiwa Mphatso, Hiroshima University, entitled

“Multidimensional Poverty in Rural and Urban Malawi: A Comparative Analysis of Nsanje district and Lilongwe city.”

Commented by Dr. KAKINAKA, Makoto, Ritsumeikan University.

Presentation 1.2 by SHRESTHA, Shiva, Hiroshima University, entitled

“Willingness for foreign employment among the youth in Nepal: Do monetary and non-monetary benefits and costs matter?”

Commented by Dr. PIYA, Luni, Hiroshima University.

Presentation 1.3 by SULTANOVA, Kumushai, Hiroshima University, entitled

“The impact of participation in Livestock and Market Development Program II on private veterinarians.”

Commented by Dr. MIURA, Ken, Kyoto University.

12:10 – 12:50 40 min.

Lunch break.

Zoom breakout rooms will be open.

12:50 – 14:50 120 min.

Session 2. Climate Smart Strategies

Session Moderator: Dr. MAHARJAN, Keshav Lall, Hiroshima University.

Presentation 2.1 by FARUK, Md Omar, Hiroshima University, entitled
“Factors affecting farmers’ adoption of flood adaptation strategies using structural equation modelling.”
Commented by Dr. FUKUI, Seiichi, Osaka Sangyo University.

Presentation 2.2 by SULTAN, S M Nadim, Hiroshima University, entitled
“Cyclone-induced disaster loss reduction with the help of social media:
A case study on cyclone Amphan in Koyra Upozila, Khulna District, Bangladesh.”
Commented by Dr. YAGURA, Kenjiro, Hannan University.

Presentation 2.3 by OKAMURA, Soyoka, Kyoto University, entitled
“Do Farmers Manage Climate Risks? Evidence from Zambia.”
Commented by JOSHI, Niraj Prakash, Hiroshima University.

14:50 – 15:15 25 min.

Coffee Break.

Zoom breakout rooms will be open.

15:15 – 17:15 120 min.

Session 3. Farming System Improvement toward Social Innovation

Session Moderator: Dr. SEKINE, Kae, Aichi Gakuin University.

Presentation 3.1 by BAKTYBEKOVA, Tansuluu, Hiroshima University, entitled
“Rural development and Sustainable Agriculture: A Case of Organic Farming in Issyk-Kul region of the
Kyrgyz Republic.”
Commented by Dr. FEUER, Hart N., Kyoto University.

Presentation 3.2 by GONZALVO, Clarisse M., Hiroshima University, entitled
“Impacts of biotech corn adoption among farmers in Pampanga, Philippines: Analyzing farmer
decision-making in connection with their self-concept and social identity.”
Commented by Dr. TACHIKAWA, Masashi, Nagoya University.

Presentation 3.3 by LU, Yang, Kyoto University, entitled
“Organic agri-food network as social innovation in Japan: A case study of Kagoshima Organic Farmer’s
Association.”
Commented by Dr. ZOLLET, Simona, Hiroshima University.

17:15 – 17:20 5 min.

Acknowledgements by SEKINE, Kae, ARAFE Board of Internationalization.

17:20 – 17:25 5 min.

Closing remarks

Dr. AKITSU Motoki, ARAFE Vice President and Professor, Kyoto University.

M.C. & Zoom operation by Dr. MASUDA, Tadayoshi, Kindai University.

Collection of Abstracts

Presentation 1.1 (ID: 42201)

Multidimensional poverty in rural and urban Malawi: A comparative analysis of the Nsanje district and Lilongwe city

TIZIFA¹, Tapiwa Mphatso, and MAHARJAN¹, Keshav Lall

1. Hiroshima University

This study aims at investigating multidimensional poverty in rural and urban Malawi by comparing the Nsanje district and Lilongwe city. Its objectives include measuring and comparing the multidimensional poverty among the rural and urban households in the Nsanje district and Lilongwe city, and to analyze the factors affecting it. The data used in this study are taken from the fifth Integrated Household Survey (IHS5), 2019 – 2020 and the fourth Integrated Household Survey (IHS4), 2016 – 2017.

Analytical techniques employed in this study include descriptive statistics, Alkire and Foster multidimensional poverty measures and the logistic regression model. Descriptive statistics such as mean, frequency distribution, and percentages describe the socio-economic characteristics of the rural households in the Nsanje district and Lilongwe city. The Alkire and Foster multidimensional methodologies involve the counting of different types of deprivations that individuals suffer at a given time. These deprivation profiles are analyzed to identify the poor, and then used to construct a multidimensional poverty index (MPI).

The study finds that the ‘living standards’ dimension of the multidimensional poverty index (MPI) identifies most of the multidimensionally poor in both the rural and urban areas of Nsanje district and Lilongwe city. On the other hand, the contribution of the ‘education’ dimension is high in the rural area than the urban area. Therefore, priority should be given to improving the education in the rural district of Nsanje. In addition, improvising alternative sources of electricity and cooking fuel could help reduce the multidimensionally poor in both Nsanje district and Lilongwe city.

Presentation 1.2 (ID: 50401)

Willingness for foreign employment among the youth in Nepal: Do monetary and non-monetary benefits and costs matter?

SHRESTHA¹, Shiva, JOSHI¹, Niraj Prakash, KAKINAKA², Makoto

1. Hiroshima University, 2. Ritsumeikan University

Existing studies on foreign employment mainly highlight the benefits and costs separately based on macro-level data or survey questionnaires. There is a dearth of research focusing on the perception of youth's willingness for foreign employment. We examined how high-school students' perceived willingness for foreign employment is affected by monetary and non-monetary benefits, costs, and employment tenures. This study used a vignette experiment, popular for identifying human preference and social desirability in various fields.

A survey experiment was conducted among 1,549 randomly selected students from community high schools in Kathmandu. Each student was interviewed with three randomly selected vignettes along with

the socioeconomics variables. Both the non-monetary and monetary benefit information significantly increases respondents' perceived willingness for foreign employment. However, the increase rate is higher for information on non-monetary benefits. The information about non-monetary and monetary costs discourages willingness for foreign employment. Indeed, the relationship is significant only in the case of non-monetary costs. The length of employment tenure does not have a significant impact on the willingness for foreign employment.

Interestingly, subgroups such as gender, religion, ethnicity, and so on, have different preferences. Male respondents were more motivated by benefits than costs, while female respondents were more risk-averse, and the non-Hindu people were interested in benefits more than Hindu people and did not care about the costs. These results suggest that rhetoric about benefits, costs, and employment tenure can effectively modify young people's perceptions about the willingness for foreign employment.

Keywords: foreign employment; social desirability; monetary and non-monetary; benefits and costs; vignette experiment

Presentation 1.3 (ID: 50901)

The impact of participation in

Livestock and Market Development Program II on private veterinarians

SULTANOVA¹, Kumushai

1. Hiroshima University

The rural population in Kyrgyzstan are heavily dependent on livestock productivity as a source of income. However, parasites and major diseases, such as brucellosis, echinococcosis, and foot-and-mouth disease, are widespread. The health of animals has deteriorated due to the reduction in veterinary services compared to the Soviet times. Private community veterinarians are the key resource at the community level who facilitate improvements in animal health and productivity. Accounting for the importance of training and technical support for veterinarians to enhance their service quality, this study assesses the effects of participation in Livestock and Market Development Program II (LMDP II) on PVs' income, service quality and mutual trust with farmers in the Osh region by applying coarsened exact matching (CEM) method. The results confirm the role of participation in LMDP II in increasing the motivation of PVs' income and mutual trust with farmers by improving their professional skills.

Keywords: private veterinarians; service quality; mutual trust; livestock productivity; veterinary service

Presentation 2.1 (ID: 50801)

Factors affecting farmers' adoption of flood adaptation strategies using structural equation modelling

FARUK¹, Md Omar

1. Hiroshima University

Flood is a common disaster in Bangladesh and farmers constitute the most vulnerable group. In the context of disaster management in Bangladesh, an understanding of ways to increase the effectiveness of farmers' adaptation strategies against floods is important. Socioeconomic factors influence flood adaptation behavior. This study incorporates psychological factors based on the protection motivation theory to examine farmers' adaptation to floods. We specify and test a mediation model where threat and coping appraisals influence farmers' adoption of flood adaptation strategies through the process of maladaptive behavior.

Data were obtained from semi-structured interviews with 359 farmers in Chowhali sub-district, Sirajganj, Bangladesh. Structural equation modelling was used to examine the relationships among constructs. The results suggest that maladaptation is an important driver for the adoption of flood adaptation strategies; it plays a role as a mediating variable that explains how threat (risk perception and flood fear) and coping appraisals (self-efficacy and response efficacy) influence farmers' adoption of flood adaptation strategies. Farmers are more likely to adopt adaptation measures if they perceive a higher flood risk and fear of flooding. Similarly, farmers will take more adaptation actions if they have higher self-efficacy and response efficacy. However, they are less likely to take adaptation actions if they are subject to maladaptation.

The results can be applied to other areas with similar characteristics for implementing effective flood adaptation measures. The study supports the theory of protection motivation to understand farmers' flood adaptation behavior. However, further research is needed to improve and generalize the measurement model.

Keywords: farmers; flood adaptation strategies; protection motivation theory; structural equation modelling

Presentation 2.2 (ID: 50802)

Cyclone-induced disaster loss reduction with the help of social media: A case study on cyclone Amphan in Koyra Upozila, Khulna District, Bangladesh

SULTAN¹, S M Nadim

1. Hiroshima University

Coastal Bangladesh faces natural disasters such as cyclones, tidal waves, storms, salinity intrusions, heavy rainfall, floods, riverbank erosion, and so on. Among them cyclones affect the maximum number of lives and assets. To reduce the cyclone-induced disaster loss people need quality cyclone warning and preparedness information. Before the popularity of the social media, people received information from conventional media like TV and Radio and local volunteers. However, during last few years the

number of Internet and social media (especially the Facebook and YouTube) users has increased manifold in Bangladesh. Many disaster managers and cyclone prone coastal people are using social media especially Facebook and YouTube for providing and receiving cyclone warning and preparedness information. This study tested that if the addition of social media to the traditional media has helped households reduce cyclone-induced disaster loss compared to those households that used only traditional media for getting warning and preparedness information.

Data were collected from Koyra (a sub-district) of Khulna district (a cyclone prone coastal district) using random sampling based on cyclone induced disaster loss by cyclone Amphan that hit in this area on May 20, 2020. 150 data points from only traditional media dependent households and 150 data point from social media and traditional media dependent household were compared. Propensity score matching was used for matching to find suitable comparison groups. Results shows that social media with traditional media dependent households were able to reduce loss by 47260 BDT compared to the other group of households. Results also shows households dependent on both media get more important information than only traditional media dependent households. This helped members of those households to work more efficiently and timely and reduce the cyclone-induce disaster loss. For getting warning and preparedness information some problems, that coastal people face include less Internet bandwidth, lack of unified single Facebook page and unified YouTube channel rumors. Possible solutions for these problems, proposed by respondent were free Internet from government before a cyclone strikes, a unified Facebook page and a common YouTube channel for this purpose and so on. This research shows that social media can be good tool for reducing cyclone-induced disaster loss in Bangladesh coastal area.

Keywords: Natural disasters, risk reduction, social media, Facebook, Bangladesh

Presentation 2.3 (ID: 51301)

Do Farmers Manage Climate Risks? Evidence from Zambia

OKAMURA¹, Soyoka, and MIURA¹, Ken

1. Kyoto University

The Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) warns that climate change will dampen agricultural productivity in most developing countries, escalating the likelihood of food crises. In this light, the effective policy design of climate change adaptation measures and their successful dissemination to small-scale farmers are urgent policy agendas in the developing world. Furthermore, active debates in the climate policy arena on a global scale require a comprehensive understanding of farmers' responses to weather risks at the micro-level.

This study contributes to the ongoing discussion by quantifying agricultural production responses to climate risks among small-scale farmers in Zambia. Zambia provides an excellent laboratory to conduct this exercise for the following reasons. First, agricultural production is prone to climate risks since irrigation facilities are almost non-existent in rural areas. Second, the mono production mode of maize crops is still dominant among the Zambian smallholders, despite the government's efforts to promote crop diversification.

By combining grid-cell level historical rainfall data with district-level historical production records and

household survey data, this study tests whether agricultural households manage climate risks and, if so, how. We first estimate the maize production function at the district level to determine which month's precipitation has the highest explanatory power for maize production. Our estimation results identify rainfalls in January and February as the most influential ones. Based on this result, we define the coefficient of variation of these two months' rainfall over the past 59 agricultural years (1962-2020) as the index for climate risks.

Next, we relate this climate risk index to various agricultural decisions concerning risk diversification or productivity-enhancing investments from household survey data collected in 2021. Results show three main findings. First, maize yields are significantly lower in regions with higher climate risks. Second, we find little evidence for crop and plot diversification strategies in response to weather risks. Third, while agricultural households in high rainfall risk regions are more likely to use hybrid seeds and cultivate larger fields, resulting in low fertilizer use per unit area.

As the final exercise, we attribute yield loss due to climate risks to each investment response. Back-of-the-envelope calculations suggest that planting hybrid seeds offsets climate-induced yield reductions by about 16%. However, this favorable impact cannot counteract yield reductions, that is, roughly 26% of potential yield loss, due to underinvestment in chemical fertilizer.

Overall, these empirical findings suggest that the Zambian farmers do not pursue conservative crop choices despite enormous efforts to disseminate adaptation policies. Our analyses also find that potential responses to rainfall variations through planting early-maturing hybrid seeds cannot make up for yield reduction due to inadequate fertilizer application. These suboptimal adaptation behaviors would trap the Zambian smallholders in low agricultural productivity and high vulnerability to weather shocks.

Presentation 3.1 (ID: 51101)

Rural development and sustainable agriculture: A case of organic farming in Issyk-Kul region, Kyrgyz Republic

BAKTYBEKOVA¹, Tansuluu

1. Hiroshima University

The study investigates the Issyk-Kul region's organic agricultural potential, and defines the region's development priorities and strategic planning for long-term growth. This study aims to look at the true prospects for organic agriculture and rural development in the Issyk-Kul region. The influence of organic farming on rural development is investigated in this research. It focuses on the changes in agricultural development in the context of organic farming, and their effects on economic, social, and environmental indicators for the status and development of rural communities.

Organic farmers in the Issyk-Kul area are the study's main subjects. A combined quantitative and qualitative research design is used in this study. The quantitative component includes the presentation and analysis of statistics on organic agriculture and rural development at the regional, village, and rural levels. In-depth interviews with 171 organic farmers from Tosor and Ottuk villages are used for qualitative analyses. The findings of this study reveal that the Issyk-Kul region has favorable factors for organic agriculture development.

Keywords: organic agriculture; rural development; sustainable development; strategic planning; developmental priorities

Presentation 3.2 (ID: 51302)

**Impacts of biotech corn adoption among farmers in Pampanga, Philippines:
Analyzing farmer decision-making in connection with their self-concept and social identity**

GONZALVO¹, Clarisse M.

1. Hiroshima University

The Philippines is the first country in Southeast Asia to approve the commercial cultivation of biotech corn; biotech eggplant and golden rice were also approved for propagation in 2021. Aside from the collection and study of various technical data focusing on biotech crop production – which has been ongoing for almost two decades now – it is also critical to understand how biotech farmers understand their self-concept and identity in their society, as they influence their behavior, resilience in times of uncertainty, and farming decisions.

This study, therefore, analyses the decision-making process of 146 biotech corn farmers in the province of Pampanga, Philippines, of which a majority are long-term adopters, to understand the impacts of biotech corn on their lives. Results of the stepwise regression and decision trees generated through machine learning show that the market situation of biotech corn and the farmers' opinions on planting biotech corn are the top predictors influencing their knowledge and willingness to sell biotech corn, respectively. This result indicates that the underlying themes of self-concept are critical factors for biotech corn farmers.

Thematic analysis shows that farmers identify themselves as highly knowledgeable about the biotech crop they are adopting, and how biotech corn has improved their lives by increasing yield and income, and reducing labor. Spearman correlation shows that capital and usage of income from planting biotech corn positively affect farmers' adoption. An increase in emotional status was also observed. Five major dimensions emerged in the factor analysis (i.e., farming resources, own experiences in planting biotech corn, community perception, family effects, and knowledge of biotech corn) which highly corresponded with the results of the thematic analysis.

This study showed the micro and macro social impacts of agri-biotech towards the biotech corn farming community, which can contribute to better policy planning and development of future agricultural technologies.

Presentation 3.3 (ID: 50201)

**Organic agri-food network as social innovation in Japan:
A case study of Kagoshima Organic Farmer's Association**

LU¹, Yang

1. Kyoto University

The wide spread of "Organic 3.0" from IFOAM, invokes a question: How can Japan further contribute to the organic sector and international sustainability since it is one of the pioneer countries in this field;

especially when it is facing substantial economic, social, and environmental challenges? In 2021, the Japanese Ministry of Agriculture, Forestry, and Fisheries (MAFF) launched a medium-long term agri-food policy, Strategy for Sustainable Food Systems (MeaDRI), promoting organic agriculture to respond to the international callings and domestic societal challenges. However, the growth of organic agriculture and the market has seen slow progress. In addition, the technical innovation approach applied by the Japanese government overlooks individuals' capacities, opportunities, and well-being, especially for the socially vulnerable, and has proved insufficient in addressing issues surrounding depopulation, aging, impacts of pandemics, and natural disasters. Therefore, seeking an alternative approach to address these failures is needed and urgent.

Social innovation (SI), is now considered a new form of innovation with theoretical and political applications, to solve socio-economic issues, generate social change, and respond government, market, and voluntary failures. SI in organic agriculture seems a promising approach to address issues in the Japanese agriculture and society. This research employs qualitative data collection methods and a case study, alongside adapting the SIMRA framework to examine the Kagoshima Organic Farmer's Association (KOFA)'s legitimacy for SI and to demonstrate its network and actors. The result suggests that KOFA constructed a SI network and reconfigured social practices by active actors and has effectively addressed the issues in the organic movement in Japan, including the prevalent application of conventional agriculture, technic-oriented and top-down national policy, commercialization of organic market, diffusion of organic knowledge and technics among new farmers, and trend of detaching from the locality. The case study also revealed the struggles, divergences, and compromises around “enough money” and “standard organic agriculture” within its network.

In conclusion, KOFA contributes to the development of organic agriculture through its social practice and offers important lessons in the sustainability of organic agriculture through its challenges within the network. It is a local, yet not an isolated case of SI in the Japanese civil society. Therefore, the priority for the current political intervention should be providing financial and social support to such bottom-up SI initiatives addressing the societal challenges, rather than being single-minded in developing top-down technical innovations. The governments bear the responsibility of developing organic agriculture to make our society sustainable.

ARAFE The 6th International Workshop Conveners:

Prof. MAHARJAN, Keshav Lall, Hiroshima University
Assoc. Prof. MASUDA, Tadayoshi, Kindai University
Prof. SEKINE, Kae, Aichi Gakuin University

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