Research article

Significant Contribution of Farmer First in Farmer-Trainer for Environmentally-Friendly Agriculture and Rural Development

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Abstract With the huge number of mouths to feed, problems and challenges on food safety and sufficiency in terms of the decreasing number of new farmers and increasing number of aging farmers arises in Japan and the Philippines. Young generations do not see farming as a lucrative career. In order to attract the youth to engage into farming, one of the potential solutions is the farmer-trainer, which is a generic term used to address farmers that provides and conducts training to farmers, and other actors in a community. As a farmer-trainer, farmer also serves as an innovator and educator and promoter of indigenous knowledge that are environmentally-friendly and safe. Prior to conducting research on farmer-trainer, this paper initially aims to identify the stakeholders and their respective roles, and to review the development and contribution of farmer first movement that significantly affect the farmers to invent, try, and share the new knowledge and innovations to other farmers and actors in their respective communities since 1987. Upon reviewing related literatures on farmer first and examining farmer-conducted trainings in the Philippines and Japan using case study approach, it became clearer that farmer first movement still plays a very important role in extending agricultural knowledge and technologies that are environmentally-friendly and contributes to rural development. This research highlights the importance of farmer first movement in boosting confidence of farmers to conduct their own trainings and to spread safe, environmentally-friendly agricultural systems especially for rural development through the development of "theme-community".

Keywords farmer-trainer, Farmer first, agricultural training, farmer-to-farmer

INTRODUCTION

With increasing population, demand on food and food production also increases. According to Asia Population (2017), Asia accounts for 60% of the world population, and Japan with 126.89M and the Philippines with 102.96M are respectively on the 6th and 7th place of the top 10 populated countries in Asia. With the huge number of mouths to feed, problems and challenges on food safety and food sufficiency in terms of the decreasing numbers of new farmers arise.

The shortage of farmers is one of the greatest factors limiting agricultural sustainability in Japan. This is due to lack of new farmers and aging of existing farmers, with an average age of 67 years old (Muramoto, et al., 2010 and MAFF Japan, 2016). The Philippines' food security on the other hand, is also at risk, as millions of farmers and fishermen are getting too old with an average

age of 57 years old. Younger generations are not keen on taking over the farm and do not see farming as lucrative career (Alave, 2011).

To uplift the morale of farmers and persuade younger generations to farming, proper and effective dissemination of technologies must be considered. Training for farmers has been proven to generate variety of results. The study of Murshed-E-Jahan and Pemsl (2011) on Bangladeshi small farmers concluded that building the capacity of farmers through training is more valuable than the provision of financial support in terms of raising production and income.

Extension Agents (EA), researchers, and practitioners acknowledge the important role of farmers as scientists in the creation of agricultural technology and educators to disseminate such innovations. Indigenous knowledge has been accepted as valid and useful in agriculture, while farmers have been increasingly recognized as innovators and experimenters (Chambers et al., 1989). According to Rhoades (1989), farmers and scientists had much to learn from each other, and particularly we had much to learn from farmers.

OBJECTIVE

This paper aims to identify the stakeholders and their respective roles, and to review the development and contribution of farmer first movement that significantly affect the farmers to invent, try, and share the new knowledge and innovations to other farmers and actors in their respective communities.

METHODOLOGY

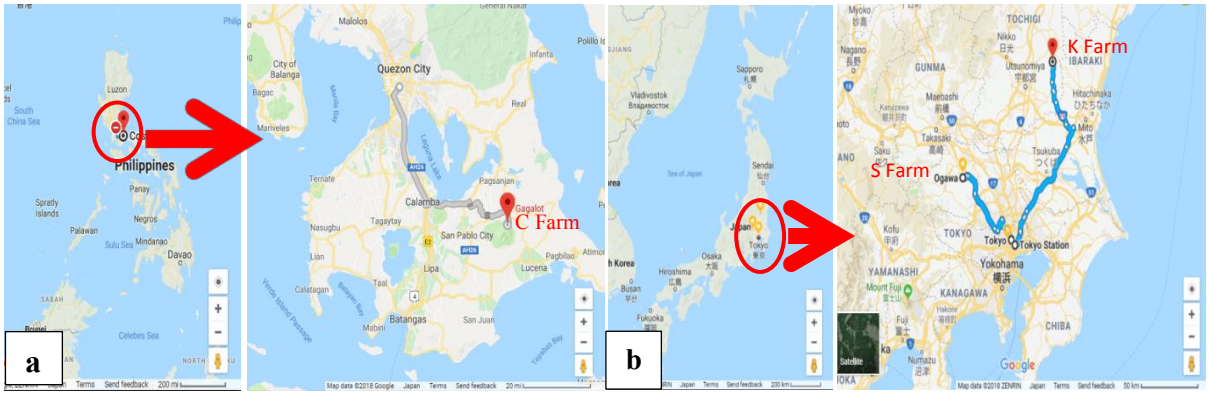

Fig. 1 Map of the Philippines (a) and Japan (b) showing the location and the distance of farms from each country's capital

This study is a type of qualitative and secondary research which utilized primary and secondary data. The researchers identified the subject domain and acquired information regarding the topic from unpublished and published reports, scientific journals, books, and articles. The research also examined interviews and farmer-conducted trainings in Japan and the Philippines. Farms in Japan were chosen as these farms are well-known to conduct trainings for decades while in the Philippines, the farm is an accredited private extension service provider for the Agriculture Training Institute (ATI) of the Department of Agriculture (DA). Through case study approach, a total of three farms were visited to understand and observe training conducted by the owner-farmer-trainer, specifically S Farm in Saitama Prefecture, Japan (located about 60km North-West from the center of Tokyo) on 13 May 2017; K Farm in Tochigi Prefecture, Japan (located about 150km North from the center of Tokyo) on 3-5 August 2017; and C Farm in Majayjay Town, Laguna Province, Philippines (located approximately 110km South of Metro Manila) on 23 August 2017. Figure 1 shows the location of the farms and its proximity to the capital in the Philippines and Japan. Data from different sources were reviewed, compared, analyzed and interpreted.

RESULTS AND DISCUSSION

Farmer First Movement

The idea of 'farmer first' was first introduced in 1987 when Chambers et al. (1989) compiled the work of several researchers that studied farmer participation in agricultural research. The concepts started by identifying farmers' problems and going back to them with alternatives. The idea proposed by social scientist in 1980s, was to involve farmers more systematically and actively in the research process to take advantage of farmer skills to experiment.

Farmer first movement was a result of gathering of small minority social and biological scientists that collaborated with farmers to further understand the reason for non-adoption of technologies in 1980s. According to Chamber et al. (1989), non-adoption of technology was more often attributed to ignorance of farmers that resulted to the prescription of extension education in 1950s to 1960s. On the other hand, non-adoption was ascribed to farm level constraints with the gaps in yield between research stations and farms that leads to a recommendation to modify and make the farm more like a research station in 1970s. In 1980s, analysis about non-adoption was interpreted as neither the farmer nor the farm is the problem, but the technology and the faults of technology can be traced to the priorities and processes which generate it.

Unlike the conventional Transfer-of-Technology (TOT) model which greatly favors the large-scale or resource-rich farmers whose conditions are the same to those research stations, the farmer first prioritized farmers' needs first. It aims to provide the appropriate technology for the needs and opportunities of resource-poor farmers.

Stakeholders and Their Roles

In Farmer first, farmers were the ones who detected and assessed their problems, needs, and priorities in their farms. Upon evaluation of the needs and problems, farmers conducted their own experiments in the farm. Successful innovations by farmers were transferred and spread to other farmers by farmer-to-farmer approach or by the "farmer-trainers" which is a generic term used to address farmers that provides and conducts research and training to farmers and other actors. Contrasting to the farmer first, the scientists were the main responsible in the assessment of problems, needs, and priorities of farmers, and key experimenters in TOT. Moreover, researches and innovations generated in research stations and laboratories were transmitted to farmers by EA. Table 1 summarizes the difference between TOT and farmer first. This clearly conveys that farmers were in the center in every activity and serve as the main actors or stakeholders in Farmer first.

Farmer-trainer does not rule out the need for scientific research, hence they open a new area of research. Chambers (1989) stated that farmers must be empowered to learn, adapt and do better on their own and on their farm field, outsiders such as scientists, EAs or NGOs should just assist and give them principles, methods and technology choices. Moreover, Franzel et al. (2015) acknowledged that farmer-trainer needs coaching and technical supervision and assistance from scientists and EAs, otherwise they may perform poorly.

Table 1 Differences between Transfer-of-Technology and Farmer First

Activity Indicators	Transfer-of-Technology	Farmer First
Problems, needs, priorities, knowledge, and analysis (are determined by)	Scientist/ Researchers	Farmers
Main location of technology or action generation (are in the)	Research Stations and Laboratories	Farm
Transfer of technology (are done by)	Extension Agents	Farmers
Central experimenters	Scientist/ Researchers	Farmers

Note: Compiled by author based on Chambers et al..(1989); Franzel et al. (2015); Hocde (1997); Rhoades (1989); and Simpson et al. (2015)

Farmer First in Farmers' Innovation and Technology Dissemination

In experimentation, farmers are more prepared to take risk and go into the unknown than conservative researchers. Chambers et al. (1989) discuss about the interest and involvement of farmers in experimentation in a holistic approach, wherein farmers seek interactions within the whole farm system, rather than redesign the whole farm at once. This approach also includes experimentation with solutions that lay within farmers' own capacity than experimenting with conventional high-input solution. Experimenting farmers are starting to believe more in themselves, and in their ability and strengths. The experiments are theirs. Farmers are participating in the construction of something new and feeling happy and proud to discover new horizons, to broadcast their work and teach their neighbors (Hocde, 1997).

The attitude of having the conviction that outsider knowledge has a universal validity and application which should override whatever the farmers know, prevent learning from farmers. Reversals of attitude are essential complements of the farmer first method. Respect for farmers, a sensitive interaction with them, a recognition of them as fellow professionals and colleagues were necessary for them to maximize their potential (Chamber et al., 1989).

Farmers are driven to satisfy their thirst for knowledge hence, salaries and allowances are not needed to motivate them to volunteer in serving as lead farmers or 'farmer-trainer' (Hocde, 1997 and Simpson, et al, 2015). Significantly, almost all traditional agriculture is a result of spontaneous spread of innovation from one farmer to another, from one village to another and even clear across continents (Bunch, 1989).

Farmers experimenting and disseminating innovations is not a new approach. According to Franzel et al., (2015), farmer-to-farmer extension programs have been used significantly in the Philippines since 1950s and in Central America since 1970s. In the Philippines, successful and outstanding farmers with knowledge on innovations are recognized as Magsasaka Siyentista (MS) or Farmer-Scientist by the Department of Agriculture (DA). According to Qamar (2012), MS play vital roles in serving as researchers and EA in their respective areas by showcasing and promoting indigenous and science and technology-based agriculture, forestry and natural resources technologies based on their own farming experiences. These farmers are not only active participants but also serves as facilitators and initiators of technology transfer process.

Table 2 shows the similarities and differences of the three farms selected in Japan and the Philippines. C Farm was established in 2006 as a hobby farm of a former IT executive with no agriculture background. The farm has been performing and conducting experiments and trainings on Organic Agriculture (OA) production management. Based on the observation of trainings and farmer interview, C Farm performs modifications and experimentations of different innovations that will suit their farm's condition and needs. Dissemination of these innovations through trainings are conducted in their own farm to their neighbors and other interested individuals and groups. As part of the interview the Farmer-trainer said that "at first we just wanted to produce safe food for family consumption, we don't want to feed our children toxic and chemicals".

The farmer-trainer added, "When we started, it was very hard for us to do OA, we even needed to go abroad to attend trainings and to adopt different technologies, and a lot of Filipino farmers does not have the capacity or means to study abroad and attend trainings". Therefore, farmer-trainers are very motivated to share the knowledge and innovations to others to promote the spread of OA for safe and healthy food and environment.

On the other hand, farmer-trainers of S Farm and K Farm were both from farming family and received formal education on agriculture in Japan. Established in 1971, S Farm conducts experiments and trainings in Ogawa Town, Saitama Prefecture. The farmer-trainer delivers his motivation and philosophy of OA, the development process and practices of his farm and how OA transformed the community through the years. Training observation showed that the farmer-trainer is really determined to encourage the community and other stakeholders; he offered the advantages and positive effects of practicing OA. He also pointed out that it must be a community adoption because it will be no effect if it is just one farm. Aside from conducting his own training in his farm, the farmer-trainer supports different activities to promote OA not just in his community but in the whole country.

Table 2 Similarities and differences between three farms evaluated

Name of Farm	C Farm	S Farm	K Farm
Ownership Type	Family-owned	Family-owned	Family-owned
Farming background of owner	From a non-farming family but attended trainings in the country and abroad	From a farming family; but in OA: develop the techniques and methods through trial and error	Family graduated from an agricultural university in Tokyo; in OA: trial and error
Location	Majayjay, Laguna, Philippines	Ogawa Town, Saitama Prefecture, Japan	Nakayama, Tochigi Prefecture, Japan
Established Since	2006	1971	1981
Farm Management	OA	OA	OA
Modified/ Innovations	Zero-waste farming, vermicomposting, farm integration	Cycle-based organic farming: plant, soil, and animal nutrients, circulating energy	Tunnel type plastic houses; rejected crops as feeds, and animal dung for composting
Training Program/ Training conducted	Lakbay aral tour, green salad tour, and trainings for days; Agri-tourism workshop	One day seminar plus farm tour and farm stay (6months-1 year)	One day seminar and tour; Farm stay, Field works, once a week meeting (2-3 years)
Trainees	Farmers, teachers, students, government workers, EA, businessmen, and hobbyist	Farmers, teachers, students, government workers, EA, businessmen, and hobbyist	Farmers, teachers, students, hobbyist and those who wants to do and establish OF

Source: Farm visits and Farmer-trainer interviews, 2017

K Farm in Tochigi Prefecture was established in 1981. Participation, observation, and interview revealed that the main objective and mission of the farm are to educate new farmers and assist them in putting up their own organic farm. The farmer-trainer delivered his short lecture about the history of their farm and some data about the diseases, and nutritional contents of their organic crops. During the interview, he said that they are doing OA because it is safe for humans and the environment, and they are involved in the *Teikei* system, wherein customers trust them to produce safe foods. "There are many people who are interested to do OA, and they just need someone to assist them", he added when asked about his motivation to conduct trainings.

Based on initial observations, successful farmers in Japan and the Philippines seem to play important role as trainers in offering and conducting trainings to further disseminate innovations and experiences regarding the success of their farms. Even if their farms are not easily accessible, trainees are willing to travel all the way to their farms just to attend their trainings. These farmer-trainers are proof that farmer and outside actors such as researchers and EA needs to work complementarily. Farmer-trainers, assisted by researchers and EA have the confidence to do their own innovation and share it to other farmers and beneficiaries. Therefore, farmer first still plays a very important role in farmer-trainers in experimenting and disseminating innovations.

Farmer First in Environmentally-Friendly Agriculture and Rural Development

As shown also in Table 2, all farmer-trainers practice OA and their agricultural innovations are more for the conservation of the environment. Innovations include the zero-waste and cycle-based farming. Based on the farm-interviews and observations, zero-waste farming can be defined by utilization of waste as the main ingredient for one of the inputs in the farm. It can be easily understood by the observation done on the farmer-trainer at the C Farm in the Philippines, where farm waste such as trimmings, weeds, and animal dung were collected and used as the main ingredient of compost for organic fertilizer in the farm. Similarly, the K Farm in Japan also utilizes rejected crops as feeds and animal dung as compost. Cycle-based farming, on the other hand is closely related to zero-waste farming, as it also follows the same concept of utilization of farm waste and other farm inputs to produce natural fertilizers and pesticides. The farmer-trainer of S

Farm in Japan believes that in nature, everything is part of the cycle, and even without the help of mankind, nature can maintain its own.

The three farmer-trainers' common goal is to have self-sufficiency in the community and spread it nationwide. Self-sufficiency in a way that they can provide the needs and demands for food of the current generation by utilizing indigenous knowledge, available resources and innovations such as zero-waste and cycle-based farming, that place back nutrients to the soil. Through this environmentally-friendly agriculture, the capability to produce of the future generation is not at risk.

To achieve their goals, these farmer-trainers also acknowledge the importance of enhancement of "theme-community" for rural development. Their aims to bring people together who shares common interest, objectives, and passion motivates them to conduct trainings. Through these trainings, their passion, motivation, and experiences are being transferred and disseminated to small-scale farmers and other actors including younger generations in the community that will eventually be persuaded to engage themselves in an environmentally-friendly agriculture that will hopefully lead to rural development.

CONCLUSION

This research concludes that farmer first movement still plays a very significant role in boosting confidence of farmer-trainers in Japan and in the Philippines to invent and modify innovations and conduct their own trainings as they are the main actor and center focus of the farm activities. In addition, farmer-trainers are more motivated and passionate to spread safe, environmentally-friendly agricultural systems using their innovations in organic agriculture.

Farmer-trainers also acknowledge the importance of enhancement of "theme-community" that brings people with common interest and passion together. Farmer-trainers' passion, motivation, and experiences are being disseminated to small-scale farmers and other actors including younger generations in the community that will eventually be persuaded to engage themselves in an environmentally-friendly agriculture that will hopefully lead to rural development.

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