No. 127 June 2026

AAINews

Connecting people, agriculture and the environment through appropriate technologies

Appropriate Agriculture International Co., Ltd.
1-2-3-403 Haramachida, Machida, Tokyo, JAPAN 194-0013
TEL: +81-42-725-6250
FAX: +81-42-785-4332
E-mail: aai@koushu.co.jp
Website: https://www.koushu.co.jp

My First Trip to Burundi

I had the opportunity to travel to Burundi as a member of the "Project to Support the Improvement of Rice Farming in the Republic of Burundi" for the first time. The field activity period spanned one and a half months, commencing in mid-May 2024.

Burundi is an inland country in East Africa. It shares borders with Rwanda to the north, Tanzania to the east and south, and the Democratic Republic of the Congo to the west. The country is situated at high altitudes, with most of its territory lying above 1,500 meters and consisting of mountains, hills, and plateaus. However, the western edge of the country borders Lake Tanganyika, the second-largest lake on the African continent, and the narrow Imbo Plain stretches north to south along the lakeshore. The capital, Gitega, is located in the Central Highlands, while Bujumbura, the country's economic hub, is a city situated on the northernmost part of the lakeshore.

The project aims to improve rice production in the irrigation area under the Imbo Regional Development Company (SRDI: Société Régionale de Développement de l'Imbo) near Bujumbura. Although bananas and tubers have traditionally been the staple foods in Burundi, rice has become a common staple since. Annual rice production increased from 40,000 tons in the 1990s to 80,000 tons in 2011, but consumption has also risen, and in recent years the country has been importing around 12,000 tons. Since the outbreak of the civil war in 1993, the country's food production has deteriorated. Since then, the economy has remained unstable due to the failed coup attempt in 2015 and the impact of the COVID-19 pandemic from 2020, and the country continues to rely on aid and imports for its food supply. Improvement of rice production is expected to contribute to economic development.

When I visited, most farmers had finished harvesting their rainy-season crops, but I was able to conduct surveys on the fields of some farmers. The survey results showed that the rate of off-type plants, which is an indicator of varietal impurity, was high at just under 10 percent, indicating quality issues. However, the average yield was around 5 tons per hectare, so productivity was higher than expected. Since the farmers in the Imbo irrigation area are primarily settlers, the farmers' associations under the SRDI are more thoroughly organized than in traditional rural communities, which may make it easier to disseminate guidance on matters such as variety selection and fertilization. Many of the farmers I met during my activity are earnest, and I believe that if seed purity were improved and areas for improvement—such as weeding and fertilization timing—were further addressed, it would be possible to increase both quality and productivity.

Harvesting of rice

Burundi is one of the poorest countries in Africa, with a gross national income of $230 in 2023. During my stay, I observed long lines of cars at gas stations due to fuel shortages, as well as reduced bus service, with many people commuting on foot. I also saw roads along the shore of Lake Tanganyika submerged, reportedly due to rising water levels caused by recent climate change. Although life is tough for people both economically and environmentally, the Burundians are gentle, and the atmosphere in the city felt peaceful. When I visited shops, imported goods seemed quite expensive, but vegetables and fruits were plentiful, and seasonal fruits like mangoes and mandarins were delicious. Other delicacies included mukeke, which tastes like sea fish; sangara, a white-fleshed fish; and ndagara, small fish simmered in tomato sauce—all from Lake Tanganyika—as well as the well-balanced Burundi coffee. I look forward to enjoying these again on my next trip.

The fish of the lake Tanganika, Mukeke

(November 2024, Kojima)

The Impact of Social Approaches on Agricultural Technology Dissemination <Part 5>

Effects on Farmer-to-Farmer Extension and Conclusion

The Northern Uganda Farmers' Livelihood Improvement Project (NUFLIP), in which AAI was involved from 2015 to 2021, focused on two core pillars: Market-Oriented Agriculture (MOA) and Quality of Life (QOL) Improvement. This series highlights how the social approach, Improvement of Quality of Life, affected the adoption and dissemination of MOA technologies.

Farmer to farmer extension

When disseminating vegetable cultivation techniques within communities, it was essential not only to train target group members but also to reach out to non-member farmers in surrounding areas. NUFLIP placed strong emphasis on the influence that target groups could have within their communities. During group selection, one of the key criteria was whether members were willing to share the training results with other villagers.

A scene from a Field Day where participants performed a short drama to present their training results.

At the end of each training cycle, a Field Day was organized as a culmination event. Farmers presented their achievements and shared what they had learned through NUFLIP training with other community members. These events provided opportunities for people interested in vegetable cultivation to participate, which helped promote farmer-to-farmer dissemination.

However, as vegetable production became more successful, there were occasional cases of theft, herbicide spraying, arson, or intentional grazing by livestock. Such incidents discouraged some groups and became a challenge for dissemination. These acts were mainly caused by jealousy or envy from non-member villagers.

To address this issue, during Field Days, groups were encouraged to share their learning openly with messages such as "We welcome anyone who wants to learn" and "We don't monopolize knowledge and skills." These messages helped reduce envy and tension within the community. Some groups also reported that, in their daily lives, by actively supporting socially vulnerable people and helping to resolve family and gender-related problems within their communities, they came to be recognized as groups not only pursuing profit but also contributing to social well-being. This recognition further helped reduce theft and vandalism.

Conclusions

For smallholder farmers, farming is closely tied to their family life. When their quality of life improves, families become more willing to work together toward common goals. In NUFLIP, this family cooperation had a positive impact on the dissemination of technologies. In particular, training on gender consideration and household financial management contributed to improving both productivity and financial capacity.

A couple working together in their vegetable field.

It is not uncommon for agricultural extension projects to incorporate social approaches. They are often designed to address social challenges in rural communities or to mitigate unintended negative effects that may arise from technological or economic changes. However, in the case of NUFLIP, the social approach itself generated a positive synergistic effect on agricultural technology dissemination.

One notable feature of NUFLIP was that the social components were carefully designed to fit local contexts, and agricultural technical experts actively participated in their planning and implementation. The integration of technical and social approaches in an inclusive and organic manner greatly enhanced the outcomes of technology dissemination. This comprehensive integration can be regarded as one of the key factors behind NUFLIP's success.

Our Concept of Resource Management and Its Technical Development <Part 2>

Efforts to Establish Compost Production Technology in Sudan

Have you ever seen the ingenuity behind wastewater pits used for flush toilets in rural Sudan? The system begins with the excavation of a large underground pit, several meters deep, dug beside the house. The key is to dig down until reaching the groundwater table. As a result, groundwater seeps into the bottom of the pit, forming a thin water layer, and the covered pit itself functions as the treatment tank. Wastewater from a nearby flush toilet is conveyed through a pipe and discharged into the pit through an opening made in its side wall. The waste accumulates at the bottom, where it mixes with groundwater and gradually decomposes.

In Sudan, where temperatures of 30–45° C are common throughout the year, the decomposition of organic matter is naturally accelerated. Under such conditions, microbial activity remains highly active, and the balance between the accumulation and decomposition of organic waste is maintained. As a result, waste does not build up toward the surface of the pit, allowing the system to function for long periods. This represents an excellent example of how organic matter decomposition can be promoted through appropriate moisture conditions under high-temperature environments.

Incidentally, similar underground pits were observed about 20 years ago in rural Mongolia. However, unlike Sudan, these were simple pit latrines rather than flush systems. Due to the cold climate, the water layer at the bottom did not function effectively, and in winter the contents often froze. As a result, organic matter did not decompose sufficiently and gradually accumulated. Eventually, such latrines were abandoned and sealed, and new pits were dug elsewhere. This contrast illustrates how climatic conditions, particularly temperature, influence the efficiency of organic matter decomposition.

Another example can be seen in everyday life. Donkey carts are a common means of transport in Sudan, and donkey manure scattered along roadsides is a familiar sight. Yet, if one observes carefully, such manure disappears within a few days. This is not due to cleaning, but rather the result of rapid microbial decomposition under high temperatures.

Inspired by these observations—the wastewater pits and the disappearance of donkey manure—I began to consider the rate of organic matter decomposition under high-temperature conditions and initiated efforts to develop compost production technologies in Sudan. Since 2017, composting trials have been conducted within the premises of a technical cooperation project office in River Nile State, testing different types of organic materials, moisture levels, and degrees of shredding. Because the project targets irrigated schemes, water application at the field level could be adjusted relatively easily. Discussions were also held with counterparts, national staff, and researchers from the Agricultural Research Corporation (ARC) and local universities on microbial activity under high temperatures, decomposition processes, and the feasibility of farmer-level compost production.

At the farmer level, the most important considerations for compost production are cost reduction and labor-saving. Our basic approach has been to avoid heavy machinery for turning by spreading organic materials in thin layers (approximately 10–15 cm thick) and carefully managing moisture to ensure uniform decomposition. At the same time, for the shredding process, we have promoted the use of choppers to reduce labor requirements. As compost materials, we focus on locally available resources such as food residues, livestock and poultry manure, animal waste, and leguminous weeds, while also testing practical aspects such as transportation and field-level operation.

Underground pits for wastewater, digging to reach the water level

Although the ongoing conflict in Sudan currently limits our ability to travel and conduct on-site activities, we hope to establish farmer-level compost production as a practical and sustainable resource management technology under high-temperature environments.

AAI and I – KOTOU Akira <Part 1>

International Cooperation, AAI, and I

Nearly forty years have passed since I first became involved in AAI and in the field of international cooperation. Looking back on my relationship with AAI and the evolution of the work I have been involved in, provides an opportunity to reflect on how international cooperation has evolved over this period.

My first involvement in international cooperation was a joint research project on desert greening in the UAE, which began in 1985. However, I had met Mr. Onuma, the former president of AAI, even before that. At the time, I had left my previous company and was studying arid land agriculture at the Faculty of Agriculture, Shizuoka University. Professors Matsuda and Yokota, together with Mr. Onuma, are the mentors who greatly influenced the course of my life. I was introduced to Mr. Onuma by the professors with the words, “If you are aiming to work in arid regions, there is a senior colleague you should meet.” Mr. Onuma was then working at the Ministry of Agriculture in Dubai. Guided by him, I joined the desert greening project in the UAE. Without knowing what to expect, I stepped into the world of international cooperation.

For me, having long wished to work in arid land agriculture, the UAE project was truly like “a fish in water.” At the same time, however, it was my first experience living abroad, and I often found myself struggling to find my bearings. Looking back, the field experience in the UAE itself, together with the senior colleagues, co-workers, and counterparts (C/Ps) I worked with, were my best teachers, and each experience on site was invaluable. After returning from the UAE, I worked for Sanyu Consultants for about four years from 1989. During that time, I participated in development studies in countries such as Bangladesh, Pakistan, and Zimbabwe, where I learned the fundamentals of development consulting. In 1992, I joined AAI as its third staff members.

From the 1970s through the 1990s, development studies were actively conducted as a central component of JICA’s international cooperation, typically leading to grant aid and yen loan projects. Within this framework, AAI was engaged in such studies as a consultant, while also dispatching its staff as long-term experts to projects, effectively playing a “dual role” in international cooperation.

Since fiscal year 2004, project-type technical cooperation has been carried out both through JICA’s direct management (“direct implementation”) and through outsourced arrangements contracted to private companies via competitive bidding. The latter, commonly referred to as “Project for Promoting Private Sector Technologies” has gradually increased its share over time and has become the main form of technical cooperation. These projects aim to develop human resources and achieve project outcomes through collaboration with C/Ps. As long-term experts, we have routinely engaged in such collaboration and capacity building efforts, and I believe that this experience has been effectively applied in the implementation of these technical cooperation projects.

In Syria, I also had the opportunity to experience both roles, as a long-term expert and as a member of a technical cooperation project, in the field of water-saving irrigation. As a long-term expert, one lives in the country for an extended period, during which you are often invited to C/Ps’ homes. These interactions frequently extend beyond work, fostering a deeper mutual understanding. In contrast, technical cooperation projects generally involve more limited, work-focused interactions. For me, having experienced both roles in the same field in Syria proved particularly valuable. The relationships and trust I developed with C/Ps as a long-term expert greatly benefited my subsequent project work.

Once formed, such bonds tend to endure. When I reunited with a former C/Ps from Syria in Lebanon in 2019, it felt as if I were meeting friends I had only parted from the day before. For me, my experience in Syria remains one of the most memorable chapters of my life, alongside my very first project in the UAE.

In the desert of the UAE