

Challenging dryland agriculture through business

Summer in Sudan is quite intense. Temperatures gradually start to rise from March, and from April onwards, day time temperatures can exceed 40°C for several months. Arid regions with annual precipitation of less than 200 mm extend from the central to the northern parts of the country.

I had a short visit to Sudan in December 2022. The purpose of the visit was to explore the potential for local adaptation of a water-saving agricultural technique developed by a Japanese company; Tottori Resource Recycling Inc.. AAI's role in this survey was to provide a field coordinator and as I had experience of staying in Sudan for three years prior to joining AAI I was qualified. This time I was given a valuable opportunity to get involved in the agriculture sector in Sudan through the lens of a business perspective.

Agriculture in Sudan can be broadly divided into two production systems; irrigated agriculture and rain-fed agriculture. Irrigated agriculture mainly extends along the Nile River, where wheat, cotton, horticultural crops, and fruit trees are grown. Irrigated agriculture accounts for only 10% of the total cultivated land, but it comprises around 50% of the total agricultural production, making it an important area for the economic development of the country. In many irrigated areas, including the state-run Gezira scheme (880,000 ha), which was built in 1925, irrigation facilities such as pumps and sluices are now deteriorating, and irrigation canals are lacking maintenance. In these areas, there is a need for introducing water-saving technologies due to the water use constraints. In this survey we found that recent government reductions in subsidies for energy (electricity and oil) have had an impact on the operation of irrigation facilities. It was confirmed that there is an increasing need for more efficient use of water resources in order to reduce the energy costs associated with facility operation, especially at privately operated irrigation facilities.

In areas away from the Nile River, rain-fed agriculture is practiced. Although the productivity of the rain-fed agriculture is much lower than that of irrigated agriculture, grains such as sorghum and millet are produced on a large scale, making it an important area for the food security of the country. It is also an area that



Taking water from the Nile using floating pump

will be most susceptible to the effects of climate change, since the production is dependent on rainfall. In such areas, there is a great need for water-saving agricultural techniques that make effective use of limited water, but because the majority of producers is comprised of vulnerable farmers, it is difficult to establish economically feasible businesses. Therefore, it will be necessary to introduce the water-saving technology using various approaches, such as doing business with private companies engaged in production activities in mechanized large-scale rainfed areas, collaborating with development projects conducted by government and international organizations, and corporate CSR activities. In these areas, business planning needs to adopt a medium to long term perspective.

The situation in Sudan has been unstable since the political upheavals that began in April, 2019. Much development assistance stopped after the military coup that occurred in October 2021, and government has been unable to function as normal. We had opportunities to interact with the private sector in Sudan and observed that they are constantly proceeding with their businesses by confronting the various issues the country faces. I witnessed the continued efforts of the companies to meet challenges and this led me to recognise the strength and potential of the country.

(January 2023 Nagano)

'Towards the 21st Century' Revisited <Part 4>

Involving with community as a new fruit farmer

I am a member of the Regional Revitalization Cooperation Team in Mito City (see AAI News No. 116). The activities vary depending on the requests of the local government or communities. In my case, I am positioned as a member of "farmer-type cooperation team" that utilizes official agricultural preparation funds, and I was expected to settle in the local community as a new farmer. The Mito Tourism Orchard Gardening Association, where I trained, was established in 1972, and once had as many as 23 members. However, there are only 10 members now, and the number is decreasing due to aging.

If one is to become a fruit farmer, it is best to take over an existing orchard and gradually renew the fruit trees while earning some income. However, it is not always possible to



Drilling a well on rented farmland

inherit an orchard that is in good condition and at an appropriate time. Most farmers wish to continue farming for as long as they can work, and gradually give up the orchards as trees age and are attacked by disease. In the second year of my training, I was entrusted with the management of two separate orchards; growing grapes and Japanese pear trees with the intention of taking over their management. At the same time, I leased several other pieces of vacant land and began managing a total of six scattered farmlands.

The experienced farmers repeatedly offered advice along the lines of "There is no way to manage so many trees from the beginning as a farmer." However, I could not afford to wait for conveniently concentrated orchard areas in good condition. Unless one is renting farmland and planting seedlings there is no prospect of becoming an independent farmer. By managing the fruit trees by myself throughout a year, I learned techniques for fruit growing and managing farms. Moreover, I was able to get closer to the neighboring farmers by experiencing the hardships and rewards which are difficult to obtain as an outside observer.

In the vineyard, which had been nonproductive for several years due to disease, the garden owner requested that the vines should be managed without cutting down the existing trees. As a measure against disease, I installed partial rain covers. Although I could reap a harvest, the disease recurred in the non-covered parts while the covered trees were not much affected. After observing that rain covers are more effective than spraying pesticides, the owner gradually understood and decided to bequeath the garden to me.

Regarding the pear garden, I maintained the trees for a year. However, the owner pointed out that the grass in the garden was not mowed in a timely manner. Then he stated at this point that it would be better



Grapes ripening under rain covers

to leave the land vacant rather than pass it along to other persons. After further discussions, I gave up on the prospect of inheriting the pear garden. Although I was disappointed that my efforts were not rewarded, I realized that it was quite difficult to grow multiple fruit trees with inexperienced skills. In the third and last year of my training, I decided to narrow my focus to three gardens, approximately one hectare in size, and prioritized planting my own seedlings and becoming an independent fruit farmer.

Even within the same community, residents have different views regarding land assets. Farmers tend to be conservative. Some farmers have a sense of shame about lending their farmland to others. As a newcomer, it is important to build trust over time while respecting the local people protecting their land. Becoming a fruit farmer is one way to interact with communities. Being a farmer requires a high level of commitment because it involves natural and cultural assets namely the farmland and the fruit trees themselves. This involvement however enables one to achieve a deeper understanding of the local community.

Useful plants in Sudan <Part 5>

Wheat

There's no denying that wheat is a "useful plant" for humanity. Along with rice and maize, wheat is one of the world's three major crops, with a production volume of 765.76 million tons in 2019. It ranks second after maize and is produced in almost the same volume as rice. It occupies the position of the main grain in terms of consumption in Sudan. From the traditional staple food, sorghum, wheat gradually became a popular food. For details on how it became popular, see past AAINews series " Sudan Kassara Essays <4>" (AAINews No. 88). However, a significant gap remains between production and self-sufficiency. Currently, this gap is being filled by external procurement through imports and the government provides production quotas, loans, subsidies, etc. Despite government incentives to encourage planting, the cultivated area for wheat is not increasing.

The economic situation regarding wheat rapidly deteriorated due to a combination of factors, such as rising prices and the depreciation of the country's currency due to exchange rate fluctuations. The price of wheat flour has increased, leading to shortages of bread products, and the long lines forming at bakeries on the eve of the revolution in 2019 are still fresh in popular memory. Since then, financial difficulties have been exacerbated by political changes such as revolution and social unrest, and the effects of the war in Ukraine have also been serious, therefore the supply and demand situation for wheat in Sudan is expected to worsen further. In addition, bread baking was electrified 10 years ago, but due to the rise in prices recently, the fuel used for baking has gone back from electricity to gas, and then from gas to firewood. As mentioned above, there are various difficult aspects to the situation surrounding wheat in Sudan, but in introducing it as a "useful plant", I would like to spotlight recent positive developments in terms of production and future possibilities.

Wheat was originally a crop suitable for cultivation in semi-arid, cool winter/spring climates. Although there are limited areas suitable for production in Sudan due to its high temperatures, wheat production is flourishing in the Northern States and northern River Nile States where winters have a relatively long period of low temperatures. Therefore, developing heat-resistant varieties is an

important issue in Sudan. About 30 years ago, when I was staying in Syria, one Sudanese researcher was working at ICARDA (International Center for Agricultural Research in Dry Areas), which was headquartered in Aleppo at the time. I am reminded of this researcher studying abroad and talking passionately about heat-resistant varieties. In recent years the effects of climate change have been discussed, and there is an urgent need to develop varieties that are resistant to heat caused by global warming. In Sudan, the JICA-SATREPS project, "Development of Innovative Climate Change Resistant Technologies for Sustainable Wheat Production in Dry and Hot Agroecosystems in Sudan and Sub-Saharan Africa" is underway. There are growing expectations for creating varieties that can withstand harsh climates.

On the other hand, in Sudan, from the perspective of increasing and promoting wheat production and planting by small-scale farmers, attention is being paid to the idea of combining summer crops with new cash crops as well as introducing crop rotation. However, there are constraints such as the problem of revolving funds for planting and the obligation to get seeds and fertilizers from banks and repay them in kind. Therefore, while wheat can be used for self-sufficiency and as a reliable source of cash income it is generally not an attractive cash crop for farmers in terms of profitability if there are other competing cash crops. As a way out, it is important to establish a crop rotation system with oil crops and legume crops such as pigeon pea and soybean, and to create an efficient capital circulation model between summer and winter crops. We believe that the creation of heat-resistant wheat varieties and the introduction of useful new crop rotation systems will lead to expanding the future possibilities of wheat production.



Harvesting wheat with combine. Mechanization is essential.

Independence Brought by Everyday Activities and Self-Esteem

Efforts of Terra Renaissance

Terra Renaissance is a certified NGO based in Japan that has been working in Northern Uganda since 2005. It has supported the social reintegration of 251 former child soldiers. When I visited their base in Gulu city, young people from the 11th intake I saw males learning furniture making while females were learning sewing machine maintenance.



Female beneficiaries learning how to maintain sewing machines

Since the late 1980s in Northern Uganda, the Lord's Resistance Army (LRA), an anti-government organization, and the government army have been engaged in combat. During the internal conflict the LRA abducted over 30,000 children and forced them to fight with guns on the front line of the battlefield.

After the ceasefire in 2006, the security situation in Northern Uganda improved, and people gradually resumed their former way of life. However, the social reintegration of former child soldiers, who bear significant physical and mental scars, has been extremely challenging. To address this, Terra Renaissance launched a social reintegration project with the goal of enabling former child soldiers to acquire necessary skills for social reintegration within three years, achieve economic independence, improve relationships with local residents, and live safely in the community. In addition to vocational training such as sewing and carpentry the project also provides living support to enable beneficiaries to focus on vocational training, as well as basic education and microcredit for independence after graduation. They also conduct peace education and individual counseling through traditional rituals and cultural activities eg songs and dances. According to Mr. Suzuka, who guided me, the most effective counseling for those with trauma is "usual everyday activities, like sharing meals together."

Furthermore, Mr. Ogawa, the representative of Terra Renaissance, has analyzed the project's activities and compiled his findings. He discovered a significant correlation between the "degree of independence" and "self-esteem." Additionally, "self-esteem" was found to be derived from beneficiaries' acts of "contributing to others,

including family and relatives." This revelation underscores the intriguing insight that while "independence" and "connection with others" may at first seem to be opposites they actually exhibit a strong correlation.

Interestingly I realized that the impact of these "everyday activities" and "self-esteem" spurring the independence of former child soldiers has also been observed in the JICA Northern Uganda Farmers' Livelihood Improvement Project, in which AAI has been involved since 2015.

While some former child soldiers are among the target farmer groups supported by the project, the project does not specifically identify them. However, there was a moment when a young man stood up on the final day of one training session and said, "I want to say something." He then revealed that he was a former child soldier and said, "Through the project activities, I learned techniques, cultivated vegetables, and earned money together with other group members. Finally, I was able to gain confidence in myself." Upon hearing this, I realized how meaningful it is for people with trauma to spend ordinary days and collaborate with others.

Currently, we do not use the term "former child soldiers" in the project. According to national staff, "They are already members of the community, so there is no need to further identify them." However, according to Terra Renaissance, the LRA has not been dismantled, and there are still around 10 returnees annually. It would be good if the region became peaceful and everyone could stop recalling painful memories. On the other hand, I realized that I had casually regarded the internal conflict as "the past" and was ashamed of my own thoughtlessness. After witnessing Terra Renaissance's activities, which have continued to support the former child soldiers for 17 years, I was once again impressed. We at AAI also will continue working for the peaceful days of the people of Northern Uganda with Terra Renaissance as good neighbours.