

Irrigation management transfer in Egypt

Morning in Cairo is often overcast with thick clouds blanketing the city. One might think that rain is coming but usually it does not. The clouds wither and vanish, and the hot sun emerges. Why the clouds? Why no rain? The answer is the Nile. The famous Greek writer, Herodotus called Egypt the gift of the Nile. The clouds over Cairo are due to evaporation. The Nile is breathing and water vapour forms the Cairo clouds in the morning. This is water circulation. And one immediately feels how important and powerful it is. One still cannot discuss agriculture and other forms of water utilization without the Nile. The river accounts for 97% of the water resources in the country.

Egypt is a desert country with less than 50 mm of annual average precipitation. Yet agriculture is a major industry! Largely in the sediment rich Delta region in the lower stream of the river, Egypt farms 3.3 million ha of land, producing crops such as wheat, rice, maize and sugar cane, for a population of 82.5 million (as of 2011). Around 50% of wheat is for domestic use. However crops such as rice, potato, cotton and citrus fruits are important export items. More than 98% of the production is on irrigated land, and most of this depends on water channel networks with the Nile as the principle water source. Times change like water flow and water availability. Egypt, the irrigation superpower, is now facing dilemmas. On one hand, there is a tremendous demand for irrigation expansion due to the pressure for securing food production to feed a population that is increasing at 2% per year. On the other hand, there is growing pressure for greater control to curtail water demands by the irrigation agriculture sector. Non-agricultural sectors need Nile water, too.

Egypt is a downstream nation, dependent on upper Nile regions where competition for water source development is rapidly progressing. Egypt's seemingly eternal and dependable water tap might be closed and the country could run dry. New water resource development in highly limited and effective utilization of the water from the Nile is an extremely pressing issue. Irrigation fields, the largest water using sector, are currently under the strictest ever scrutiny to ensure that water use efficiency is improved. These efforts by the Egyptian government are hampered by financial difficulties and, as a result, the government led irrigation management system is on the brink of collapse. A breakthrough is required and to enable this, the government is in the process of actively promoting "Water Management Transfer (WMT)", with proactive participation of beneficiaries for irrigation management.

In irrigation systems that are dependent on a large water source such as the Nile, the intaked water is distributed through a series of channels. From the river to the main channel, and then to the secondary and tertiary canals, before it reaches an enormous number of individual

farming plots. Water is a shared natural resource and it needs to be shared cooperatively. Therefore individual farmers often form water user associations (WUAs) to ensure equitable distribution and use of water resources. WMT aims to transfer work on irrigation operation and management to the WUAs. In Egypt in recent years, WMT is actively promoted, and my stay in Egypt this time was also to support capacity building for WMT promotion at different levels of the administration. In the field, I cannot really say that WMT is progressing totally smoothly, however it was obvious that it was a very important issue.

Large scale irrigation systems are benefiting individual farming plots, as blood in our body goes to individual cells from the aorta to arteries, and is then dispensed through small blood vessels. However, cells and body sections (end users) should not be simply receiving blood (water) which is pumped from the heart (water sources). WMT seems to suggest that end users should enhance their understanding on how the entire system can be sustained and function to lessen the load of the upper part of the irrigation system structure. There may be limitations on what end users and WUAs can do, but they need to naturally share responsibilities and roles, if the whole body (the whole irrigation system) is not to dry up and die. They must provide a cure because the scenario is dire and involves survival. There are, of course, many different discussions and problems related to WMP promotion. However these will certainly continue to be important issues in Egypt and in other countries with irrigation agriculture which is dependent on large scale irrigation systems.

Egypt is currently facing a political crisis and in the midst of the chaos caused by the Jasmin Revolution, I see no signs of the situation calming down. The world's attention is on the politics. This is short sighted. The irrigation systems are the foundation of the nation's survival, and the management of water is also on a major crossroad. I cannot and should not ignore the Nile. Egypt depends upon this great river.

(By Matsushima, July 2013)



A primary channel that forms the main irrigation facilities of the Delta region



Members of the WUA working towards more active management and operation of the irrigation system through WMT at a pier

From the frontline of environmental education <Part 4>

Groundwork Mishima

What is Groundwork?

Groundwork comprises practical environmental actions. The idea started in the United Kingdom in the 1980s. Residents, in partnership with government administrations and private sector companies, conducted environmental improvements and conservation activities. Unlike traditional government led methods, residents actively participate in the activities, and private sector companies take part in the work with a view to contributing to local society. The three parties collaborate on activities to maintain the local environment to improve the quality of their own environment and society.

Groundwork Mishima

Non-profit organization (NPO) Groundwork Mishima (GW Mishima) introduced the UK's Groundwork method for the first time in Japan. In Mishima, spring water from Mt. Fuji had decreased and the environment had deteriorated. GW Mishima was initiated in September, 1992, by eight citizens groups, with support from the Mishima Municipal Government and private companies, aiming to restore and improve waterside environments in Mishima, known as the Water Capital. Currently, 20 citizens groups are involved in the GW Mishima and it obtained official NPO status in October 1999.

Until now, the GW Mishima has been conducting practical work in 50 locations in the city. The work includes restoration of rivers clogged by garbage, reintroduction of extinct flowering water plants called Mishima Baikamo (*Ranunculus nipponicus*), restoration of old wells, spots that honour "water gods" and spring ponds, and the creation of firefly habitats.

From Environmental Restoration to Local Revitalization, and to Human Resource Development

The GW Mishima has been coordinating partnerships between the residents, NPOs, companies and government administrations, and these initiatives have been yielding many results improving the environment with citizens' participation. These successes based on practical activities have led to an increased number of visitors and tourists to the GW Mishima. The environmental restoration work is yielding an expanded impact regarding local economic revitalization. GW Mishima is also nourishing human resource

development through internships and other educational and inter-active approaches.

GW Mishima's Environmental Education Activities

The GW Mishima also conducts environmental education programs targeting local children and adults. It organizes nature observation sessions, eco-study tours, establishment and maintenance of "biotopes" in schools, and mobile environmental classes for primary and secondary schools. In particular, focused efforts are made for environmental education for children to nurture the human resources of future generations. In the study tours and mobile environmental classes, the GW Mishima takes the participants to their work site on the ground and uses the sites as open air class rooms, which brings guests close to the field and enhances their understanding. In addition, guidebooks on freshwater wildlife of the Gembe-gawa River and bilingual environmental *karuta* card games have been produced as teaching aids.

Think Globally, Act Locally

The GW Mishima's activities originate from the restoration of the Gembe-gawa River – the largest river in Mishima which is fed by springs. These were previously polluted by solid and liquid wastes and household effluent. As the theme was rooted in local areas, it was a familiar thing, easy to understand for local residents and it was relatively easy to inspire interest and, as a result, show progress and results.

When a problem is enormous such as global environmental issues, sometimes ordinary people may not know what they can do and how they can do something to tackle the issues. The GW Mishima's activities present a good example of successfully showing practical ways of how people can "think globally and act locally", through working to solve the local environmental issues, while clearly understanding the linkage between local and global issues.

From now on, we need to understand how these practical and individual initiatives can be positioned in the global effort to solve holistic environmental issues. Furthermore, by linking the visible and every day activities which the GW Mishima is working on with environmental education in schools, they can have significant educational impacts by being able to convert knowledge into action.



Walking along the restored Gembe-gawa River



Restored habitat of Mishima Baikamo (*Ranunculus nipponicus*)

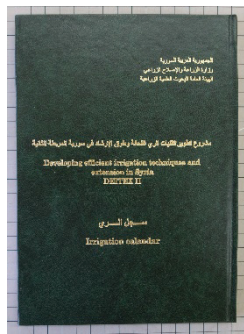


Bilingual environmental *karuta* card game

Water saving irrigation extension tools in Syria <Part 4>

For the Project on Development of Efficient Irrigation Techniques and Extension Phase II (DEITEX II), which aimed to achieve water saving irrigation in agriculture by farmers, it was an extremely important task to understand the actual irrigation water amount. In order for farmers to practice water saving irrigation, it is essential for them to understand the actual situation of their farming plots. However, many farmers cultivate their crops based on vague memories and instinct, and they are not accustomed to keeping records. There were a small number of farmers who took notes on a scrap of paper, but no farmer was keeping records in a notebook. We developed the irrigation notebook, thinking that by keeping records in one notebook, and by understanding quantitatively the volume of their irrigation water and fertilizer inputs, farmers might notice what aspects needed to be improved in their farming. This idea was designed to lead to increased awareness about the need for water saving.

The irrigation notebook concept came from the “Maternal Health Notebook”. This is issued in Japan and provides all the necessary information on maternal health with sections for recording progress and information. This manual intrigued us because of its cover on both information and recording. We mulled over an irrigation version following the basic principles. It was just a thought. What finally triggered the development was that one extension worker with us requesting the Japanese notebook we were using. Many of the Japanese team members were using the field notebook which can fit in a shirt pocket. Every day, we would take out the notebook from the pocket to jot things down. For the Syrians, not accustomed to taking notes, our note-taking behavior, must have seemed curious. Intrigued, one day he asked for one. Rather than simply offering one, we decided to work on developing a Syrian version of the field notebook. We discussed daily with the counterparts regarding the size, page numbers and looks of the notebook. We visited printshop many times developing prototypes.



Green hardcover of the notebook to create a field look

As in other extension tools, we first communicated to the extension workers the objectives of the irrigation notebook and how to use it. Then, the extension workers distributed the irrigation notebook to individual farmers as part of their extension work. To the farmers, we emphasized the point that the notebook is not for recording information for our project, but for their own future. We took care to minimize the farmers’ potential feeling of being imposed upon. From the planning and development stage, we were anxious as to whether the farmers would actually use them. However, once distributed, the notebooks were very popular and our worries were unfounded. During the project, when we

visited farmers, we checked to see if they were using the irrigation notebooks. We also actively promoted the use of the notebooks. In some cases, the irrigation notebook was used as a communication tool, with the extension workers interviewing farmers and noting what they had to say in the notebook, and assisting them to compile their own observations.



We received unexpectedly positive feedback on the irrigation notebook. On the strength of this we produced the 2nd edition. In this 2nd edition, we tried to improve coordination between the notebook and other extension tools. We included guidance on how to use the discharge measurement kit and the irrigation calendar. We also added an analysis sheet to enable farmers to conduct simple economic analysis by themselves. Through these additions, we aimed at making the irrigation notebook even more practical and aligned with our project activities.



The 2nd Edition

In April 2011 after we finished distributing the 2nd edition to farmers and when we were planning to make full use of the 2nd edition, Syria was engulfed by the Arab Spring. The Japanese team was evacuated and we could only provide remote support to the project from Japan. One year after the evacuation in April 2012, we invited counterparts, extension workers and farmers to Jordan to wrap up the project activities. We will never forget the deep emotion we felt when farmers and extension workers showed us the irrigation notebooks crammed full of records. We greatly admired their efforts despite their extremely difficult circumstances. We really hope that Syria’s situation will be stabilized as soon as possible and that the farmers will be able to focus on their farming work and make further use of the cultivation records.



Notebook crammed full of information



Checking the notebooks in the crop field

Reports on activities of ex-participants from Central America <Part 2>

This is part 2 of the report on the post-training activities of the ex-participants of vegetable cultivation technology training course from Central America. Here I report on 4 ex-participants whom I visited in El Salvador.

Mr. Walter Alexander Cosme Linares (2011)

Cosme who works at the Catholic University was appointed as the Coordinator for the Investigation and Research Section, as recognition of his experiences of planning and conducting individual experiments on drip-fertigation during his training in Japan. He is now in charge of overseeing the research results of the 35 researchers attached to the facility and will also be in charge of maintenance of the new rain shelter cultivation establishment which the university is planning to build. This will be used for small scale farmer training.

Mr. Roberto Carlos Diaz Vanegas (2012)

Roberto is working at the same Catholic University as Cosme. He is in the Social Unit. His main duty is to develop and implement rural development projects. I had the chance to see his boss. "I hope I see that he has gained an ability to identify issues at the work place and analyze them," said his boss. He was eager to start basic investigation and experiments of paprika, to start a new project on paprika cultivation using chicken manure. There will be a review of the Social Unit's project plan after the normal three years project period. His action plan derived from his time spent training in Japan.



Roberto (right) and his boss (left)

Mr. Luis Ernesto Trujillo Rodriguez (2011)

Louis who belongs to the National Center of Farming and Forest Technology (CENTA) listed in his action plan the establishment of grafting technology to prevent bacterial wilt disease of tomato. Within one year after returning home, he managed to collect seven strains of wild tomato that have the potential as root stock for grafting and propagated their seeds. In addition to implementing his action plans, he has been actively working to utilize what he learned in the training in Japan including making of the Bokashi fertilizer (Japanese traditional fermented organic fertilizer) and rice straw compost. In terms of improving cultivation techniques, he solved the problem of carrot not growing sufficiently large because of hard soil in his area by mixing sands in the soil and making raised beds for planting. He was also in charge of developing curricula for the training school for

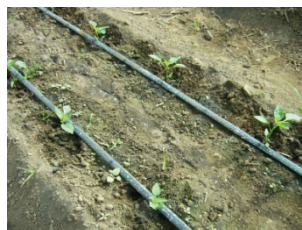


Carrot growing well in raised planting beds

farmers which the CENTA provides. He expressed his enthusiasm to develop a curriculum which links lectures and practices as he experienced it in the training in Japan.

Mr. Cesar Orlando Mejicano Cruz (2010)

Cesar also works at the CENTA, and has been counterpart in the Project for Supporting Small-Scale Farmer in the Eastern Region until March 2012. He still instructs vegetable cultivation technology continuing the same duties. Bacterial wilt disease was also a serious problem in his area. However, by making 15 cm high planting beds with mixed mountain soil and Bokashi fertilizer, he had successful outcomes avoiding soil-borne disease. He thought of this method after seeing the rows of raised earth for planting in Japan. The effectiveness of this method was confirmed by a plant pathologist in Japan. The pathologist commented that the Bokashi fertilizer improves the composition of microorganisms in the soil, and combined with better drainage due to the raised planting beds and water saving management using drip irrigation makes a very rational formula for preventing bacterial outbreak. Another problem in the area caused by virus disease was conquered by the net house cultivation which was introduced by the project. He provided technical guidance to 40 farmers. 17 out of the 40 farmers are currently using the above mentioned cultivation method. In 2013, an additional 7 farmers are planning to introduce the method.



Raised planting beds with mixture of the Bokashi fertilizer and mountain soil



Green pepper growing healthily with no sign of bacterial wilt disease

Both Luis and Cesar have been showing concrete examples of active use of what they learned in the training in Japan. While project counterpart Cesar's efforts attracted support, it seemed difficult for Luis to gain full backing from his boss at first. He was initially permitted only to work on the action plan "within a certain limit with no harm for his core work." Happily, he has since been able to implement his action plans after a great deal of effort. This experience indicates that project counterparts are more likely to be able to utilize the results of the training in Japan because they are supported in their efforts.

I received communication from Luis shortly after I came back to Japan. He informed me that his action plan and his steady efforts have been recognized by the research unit management, and he will be able to work fully on the action plan as the research unit's core work. His challenge is starting in full!