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Thoughts on Agriculture in Cambodia

The country is comparatively flat and is comprised of vast, fertile agricultural lands spread throughout the nation. The climate is tropical monsoon and hot with high levels of precipitation during the wet season. Water resources are ample with the Mekong River cutting across the country from the north to the south. In this favored natural environment, Cambodia has been growing rice for millennia. The people have locally existing irrigation technology for rice and over years developed many varieties of local rice cultivars. In recent years fruit and vegetable cultivation has grown, however rice remains the country's main crop and is the most important export item. Despite Cambodia's long love of rice, compared with neighboring rice exporting nations such as Thailand and Vietnam, Cambodia's production volume and quality remains inferior (the average yield is only 2.5 ton/ha). In Cambodia, in order to increase rice productivity, irrigation system consolidation and agricultural technology improvements are called for. Various irrigation projects and associated capacity building activities are under way.

In order to promote modern irrigation technologies and increase irrigated areas targeting rice cultivation, it is essential to increase the capacity of irrigation technicians. As it is particularly important to nurture new technicians, this author was requested to investigate and develop a program focusing on training new experts. The program development was formulated through the training needs assessment using the CUDBAS method based on new staff placement patterns and their current capacity within the Ministry of Water Resources and Meteorology (MOWRAM). The program directly responds to the needs and appropriate requirements for the current training implementation environment of the Ministry. The levels of new recruitment are on a sharp decrease, and a recommendation was made to recruit new technicians in order to ensure the sustainability of the training program. As space in this newsletter is limited, I will not go into details of the content of the irrigation technician training program. Instead I would like to briefly touch upon unique Cambodian situations related to agriculture.

MOWRAM's staff age balance is highly uneven. Most of the staff are in their mid-40s to 50s, and there is a significantly smaller number of staff immediately below and above that age group. The reason for the small number of young staff is a human resource policy failure, but there is another reason for the lack of staff above 50 years old and in their professional prime. It is the scar of the Pol Pot Era. Capable technicians in this particular age group are totally missing. The Pol Pot specter is still haunting the structure of the group of technicians who should have shouldered the burden of irrigated agriculture in this country. The ghosts in this case are the dead technicians. The Khmer Rouge promoted a radical form of agrarian socialism as their ideal, killing more than 30% of Cambodia's population in the process. They abolished the monetary economic system and completed abandoned modern science and eliminated technology and technicians. They forced urban dwellers to relocate to the countryside to work on forced labor projects such as construction of irrigation canals (so called Pol Pot canals) and exterminated floating rice and original local varieties of rice. The fact that such a tragedy is deeply connected to unrealistic agricultural ideology is highly intriguing. Some experts say that it was the process rather than the objective that was wrong with the Khmer Rouge's rice production policy. I wonder if that was the case. The Pol Pot canal system consisting of square blocks, uniform in shape, 1 km per side was created at the expense of a huge amount of manpower. However the agricultural vision totally ignored terrain, undulation and soil quality and is now nothing but a historic relic. Cambodia's floating rice that is highly adapted to the seasonal flooding once had many varieties. However, now agro-diversity has decreased dramatically. Elimination of diversity and specialization has not only resulted in failure of agriculture, but has also left evil roots still blighting the growth of the future of Cambodian society. What the Khmer Rouge aimed for seems to have originated in the concept of the 'elimination of diversity' and this was a major part of the essence of their mistake.

The Khmer Rouge ruthlessly exterminated not only the ordinary citizens of Cambodia but also their own comrades within the organization. As it was in its agricultural policy administration, it was an organization that could not tolerate any heresy and heterogeneity in policy implementation and organizational management. They pushed forward to consistently eliminate diversity within the organization and society at large. The Cambodian people closely follow Theravada Buddhism. Even the modest and kind hearted Cambodians let such tragedy and destruction happen by denying the importance of diversity (or by indulging themselves in the radical ideology of exterminating it). (By Matsushima, January 2013)

A Buddhism Pagoda that is placed by the main gate of the headquarters of MOWRAM. It made a strong impression on because it seemed to signify the devotion of the Cambodian people to Buddhism.

From the frontline of environmental education <Part 2>

Yatsuhigata Nature Observation Center

On Yatsuhigata

Yatsuhigata is a 40-ha tidal flat in Narashino City, Chiba Prefecture. Most of the tidal flats in the Chiba portion of the Tokyo Bay were reclaimed one after another during the 1960s and 70s. They were converted into industrial and residential areas. However, as Yatsuhigata was on the national government's land, it escaped reclamation. As a result, Yatsuhigata provides scarce habitats for migratory shorebirds that visit Tokyo Bay. For these very good reasons it was designated a Ramsar site in 1993, under the Ramsar Convention, thereby endorsing its international significance as a wetland site of Global Importance.

Nature Observation Center

The Yatsuhigata Nature Observation Center (in this article; 'the Center') is an observation and enjoy and learning place about the Yatsuhigata and the migratory birds that fly in to the tidal flats. It is a visitor center aiming to protect the precious tidal flats that are remaining in cities everywhere that are facing urban development in coastal areas of high ecological and biodiversity importance as well as cultural and recreational significance. Here, at the Center, there are telescopes, educational resources and bird books for bird watching and guiding is offered by knowledgeable and caring rangers. In the lecture room, video shows and lectures on birds are organized. During weekends, events such as bird watching, and benthic life form and plankton watching events are also organized. The emphasis in the Center's 'exhibit corner' is on fun for children and adults encouraging all ages to learn about birds through interesting activities.

Environmental Education at the Center

At the Center, a variety of environmental education programs are offered targeting primary, secondary and high school students and citizens' groups such as wildlife and nature enthusiasts. For these activities, not only rangers but also many individual and group volunteers are involved providing support and a sense of community. Through citizens' participation as volunteers in the Center's activities, opportunities for people to know about tidal flats are increased, and their understanding about tidal flats and ecosystems is enhanced and enriched. This is expected to lead to the promotion of tidal flat protection actions by the general public, here and elsewhere.

Junior Ranger System

One unique and practical activity of the Center's environmental education programs is the junior ranger system. This offers children above the primary's 3rd grade, or older, opportunities to obtain certificates and commemorative badges as they clear different levels of challenges from Step 1 to Step 3. For Step 1 and 2, children need to participate in active programs such as 'crab fishing' and 'tidal flat creature observation'. For Step 3, children are expected to participate in bird count exercises at the tidal flats (to understand the ecological working of tidal flats and the neighbors they have here) and conduct clean ups (to protect the important environments they are in charge of and are enjoying). In addition, they need to assist in the organization of the Center's events and spread the word about junior rangers' activities (and communicate to young and old about the importance of tidal flats); the activity and duty lasts throughout the year and they become junior rangers by learning to communicate, deliver information and engage each other. In this way, they grow to be junior rangers through information dispatch and exchange activities between themselves and other people interested in conservation.

Through the step system program, children come frequently to the Center as 'repeaters' and acquire a wider range of knowledge through various activities. This in turn nurtures their interests in, and consciousness of the need to protect tidal flats. Furthermore, proactive actions such as communicating information and assisting event organizations can promote enhancement of their understanding and engagements in concrete actions. They are involved in the process of environmental education. Not just listening to it passively as is sometimes the case in conventional environmental education programs. This proactive method is very effective in environmental education and is worth further consideration at, and beyond, the Center.

Main entrance of the Yatsuhigata Nature Observation Center

Telescopes for bird watching

Bird sculpture made by volunteers

Water saving irrigation extension tools in Syria <Part 2>

In this 2nd part of the series, we would like to introduce the discharge measurement kit.

When visiting farmers' plots in order to extend knowledge and information necessary for water saving irrigation, we notice that many farmers use their own method for laying irrigation pipes or leave it entirely to the service providers. As a result, at the end of the pipes often they cannot obtain necessary water pressure because of the influence of loss of water head due to pipe resistance and other causes. These can be a major barrier for modernization of irrigation systems at the farm level, resulting in slow progress when it comes to water saving implementation. Therefore, the project tried to raise extension workers' and farmers' awareness on the importance of water saving, distributing a kit that enables them to easily measure water pressure and volume.

As shown in the photo below, the kit is extremely simple, with a pressure gauge, a joining device for 16 mm drip lines, sealing tape and a 500 ml measuring cylinder in an easily portable carrier bag. In the beginning, we included in the kit a device to enable pressure measurement at the emitter point and a stop watch, however we came to understand that it is easier for farmers to use the kit if only the most basic and essential items are included. Therefore the kit became extremely simple in the end.

① Pressure gauge: possible to gauge water pressure up to 5-6 bars
② Connecting devise to join ¾ inch socket and 16 mm pipe
③ ¾ inch socket
④ Metal connecting devise to join ½ inch pressure gauge and ¾ inch socket
⑤ Teflon sealing tape to prevent water leakage
⑥ Measuring cylinder: 500 ml capacity
⑦ Easily portable carrier bag: to contain the parts

We basically decided to measure the pressure at the drip line end. Some farmers tended to read the pressure as soon as the pump switch was on, and we therefore advised them to wait for a while until the pressure has stabilized before measuring. In addition, in some farms, when drip line ends are opened, dirty water from the pipe comes out. Therefore we taught farmers to measure the pressure only after the water becomes clean and clear. If the prescribed pressure cannot be obtained, one should go to the next step of looking into possible causes comparing the water pressure with the pressure of the control unit. Also by measuring the pressure at the close or far points from the gate bulb, it is possible to check the uniformity of operational pressure.

As for discharge measurement, for example, we measured the water volume that flows in five minutes from one emitter; this figure is then extrapolated to give the discharge per hour. One can repeat the measurement using a measuring cylinder at the different points. However, if there is enough manpower, it is possible to effectively check the uniformity at different points at the same time. In our project, we organized primary school students with a container in each hand. They stood at 9 different points and on the signal they all took the water for five minutes until they were told to stop. Then one person went around the nine points with the measuring cylinder to measure the water volume of each container. This event was quite popular. For some irrigation became fun!

Using ideas like this, and by using a very simple discharge measurement kit distributed by the project, extension workers and farmers came to understand the operation pressure of irrigation systems in use and the situation regarding the irrigation water volume. We hope that these on-site efforts will raise awareness of the importance of water saving, and will lead to expedite the extension of water saving irrigation systems which will be increasingly important in the world's arid and semi-arid regions.

Reports from JICA Tsukuba ex-participants <Part 2>

In this issue, I would like to introduce the exciting activities of Claudio from Bolivia who completed the Group Training Course on Vegetable Cultivation Technology II in 2006, as well as Nenee from Madagascar who completed the Area-focused Training Course on Upland Rice Variety Selection Techniques for Africa in 2009. The contents of the articles are as of February 2013 when Japanese version was issued.

Mr. Claudio Penarrieta (Bolivia)

Claudio is in charge of planning, monitoring and evaluation of the Creation of Rural Initiative for Food Supply (CRIAR) which is one of the projects under the Aid Program for Food Security (PASA) implemented by the Ministry of Agriculture, Bolivia. With support from the Inter-American Development Bank, this project will continue until May 2015. The project is implemented in the provinces of La Paz (west), Potosi (south west), Chuquisaca (central south) and Cochabamba (central). Currently, the project targets 16,000 families and 80 organizations in 43 cities in these areas. The project provides small scale irrigation facilities (irrigation kits), light-weight agricultural machinery, electric fencing and electric pumps, to the regions and communities.


Driving through Chuquisaca Province, central south part of Bolivia (left) and 3,700 m high Potosi Province in the south west of the country (right): Working in various provinces of Bolivia requires long-distance travel. 1,000 km drives are not unusual. As the roads are generally bad, 4-wheel drive vehicles are very useful.


Irrigation kit campaign in Tarvita City, Chuquisaca Province in central south region of Bolivia

Of the target farming households, 13,600 households cultivate maize, barley, wheat, fruits and vegetables on an average of 1 ha farms. The project provides technical advice on securing water sources, irrigation methods for different crops, and also heavily subsidizes farmers for the irrigation kit that can irrigate up to 700 m² fields for which famers only having to pay 10 % of the cost. Around 3,000 famers have benefited from this kit. The project plans to provide the kit to 3,000 additional farmers.

In the latter half of the project, he started preparing for evaluation methods of the project. In addition, in order to spread PASA-CRIAR's activities, he established the project website in February 2013.

Ms. Lalanekenarisoa Nenee (Madagascar)

The Training and Application Center of Agricultural Machinery is the only public institution of its kind in Madagascar and is located in the Antsirabe City, Vakinankaratra Region in the central part of the country. Nenee is a staff member of this center and is the counterpart of the JICA Project for Rice Productivity Improvement in the Central Highlands of Madagascar.

The center organizes various training courses as well as development of agricultural machinery and crop production. She conducts a total of 140 sessions per year including lectures and practices on vegetable crops and cultivation, as well as maintaining a 122 ha farming plot for upland rice, soy bean and maize and 5 ha of paddy. Since 2004, she has also been in charge of upland rice seed production.


Preparing planting ditches and manual planting in upland rice fields

Germination test: the experiment used 7 cultivars of upland rice variety to conduct, analysis of yield components of each cultivar and germination.

She regularly makes use of the upland rice seed production technologies which she learned at JICA Tsukuba, and has taken in many ideas to improve her daily work. She has been busy working as the JICA project counterpart, while conducting her core duties at the center. (By Ono)