

AAINews

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On the Banks of the Mekong

After seven years away from South East Asia, I was recently given an opportunity to once again visit the region. This time my brief was to survey areas along the Mekong River for about two months, as part of a development study with the title - "The study on small scale agricultural and rural development program along the Mekong River, Laos."

The target area was the agricultural zone along Highway No.13 between the capital of Laos, Vientiane, and the country's second largest city, Savannakhet. This is the main rice cultivation area of the country, and when I was there rainy season crop had just harvested and the planting for dry season crop had yet to begin. In the paddy fields, water buffaloes and cows were feeding on the remains of the harvest, and ducks and chickens were running around hunting for food. The sparse growth of remaining trees in the paddy fields serves to fertilize the soil with fallen leaves in winter and to provide shade for animals and humans in summer. Buffaloes are kept under houses raised on stilts, and animal dung is used to fertilize the paddy fields. There are also ponds for aquaculture, next to which pigs, ducks and chickens are kept and fed with rice bran. Manure from these animals is put into the ponds as fish feed or to serve as nutrients for algae and plankton. Here I felt that a traditional style of agriculture based on organic circulation still fully existed. However, the rice productivity of this area is unstable due to flood damage in the rainy season and drought in the dry season, and there is a need for improving agricultural productivity as well as raising the farmers living standard. Some progress has been made aiming at more stable agricultural activities, such as the introduction of dry season cultivation with small-scale irrigation facilities. Furthermore the mechanization of agriculture is rapidly underway due to the introduction of tractors.

On the day following my return to Japan, I noticed a newspaper article dealing with Thailand which is a Laotian neighbor state. According to the article, in the north-eastern part of Thailand, industrialization is being given priority while farming villages are being impoverished. As a result of using chemical fertilizers and buying expensive farming equipment, farmers have started incurring huge debts. On the other hand, however, an increasing number of farmers in Thailand have started natural agriculture based on organic, diversified farming, by creating ponds and growing a variety of crops and raising animals as opposed to growing only rice. They first aim at fulfilling their own needs, and this can be called 'farming for living' as opposed to 'farming for selling'. The King of Thailand is also encouraging such diversified styles of farming, stressing the importance of an 'economy of moderate self-sufficiency', and the Agriculture Extension Bureau in Bangkok is often asked to provide information on diversified farming. Needless to say diversified farming cannot be the solution to every problem suffered by contemporary farmers, but it is becoming one of the survival options for small farmers.

In order for Laos to achieve economic development and improve the living standards of the people to levels enjoyed by citizens of developed countries, it may be necessary in the future to drastically increase agricultural productivity, and eventually to promote 'farming for selling' directed at the world market. However, in neighboring Thailand which has experienced economic growth earlier than Laos, 'developed' agriculture has become regressive and, in part, the traditional style of farming is gaining popularity. Such a dilemma has to be resolved at some point. As the 21st century dawns there are increasing calls for the sustainability of agricultural development and for more environmentally friendly styles of farming. In the case of Laos, we should try to find a path of agricultural development more in co-operation with local communities, so that the past mistakes of development in other parts of the world will not be repeated here.

(April 1, 1999: Ohnuma, in Laos)



Coexistence of Nature and Humans - Towards the 21st Century (4)

Part 4: Nature and management of Okegaya-numa marsh

In spite of its proximity to the city and its susceptibility to urban development, Okegaya-numa marsh in Shizuoka Prefecture's western Iwata City (known in Japan as the hometown of the J-League football team Jubiro Iwata) remains a rare paradise for dragonflies. Here not only various kinds of dragonflies can be seen, but also a rich biodiversity exists which includes other aquatic plants and animals, surrounding forests and grasslands.

The main feature of the vegetation in Okegaya-numa is the richness in aquatic plants, and the marsh which is covered with reeds and Indian rice presents a sort of primeval scenery. Here precious clumps of rabbit ear irises are found, as well as endangered *Utricularia tenuicaulis* and *Trapa incisa*. Moreover, *Euryale ferox*, which is listed as endangered in the Environment Agency Red Data Book, is flourishing on the marsh surface. The marsh is surrounded by trees mainly of evergreen broad-leaf or deciduous broad-leaf species, and ground water flowing into the marsh comes from rainfall filtered through such natural forest, and thus retains a good water quality. Furthermore, this forest serves as a feeding place and resting area for dragonflies. It also shelters them from strong winds. The surrounding forested environment, therefore, is the key to the protection of wildlife in the marsh.

The wildlife "signature species" in Okegaya-numa are undoubtedly the dragonflies, and 65 species of them have so far been identified in this area. One of the most noteworthy among them may be the *Libellula angelina* which is also listed as endangered in the Environment Agency Red Data Book. The place is also famous for a great variety of wild birds, and 140 species have been identified here to date. When I visited this marsh area in November, there were flocks of ducks, mainly mallards, resting on the water and I was also able to observe gray herons and kingfishers.

Okegaya-numa is fortunate in that it has never been polluted by contaminated water produced by human beings, but without the long-term efforts of those persons involved in the conservation of this area, the wonderful nature of Okegaya-numa would not have been preserved. The prefectural government bought up the land and designated the area a nature and wildlife reserve, and established a committee on the conservation of Okegaya-numa which meets regularly. In addition, local conservation groups have been working hard for the same cause. Aside from constructing walking paths and providing instructions for visitors, they are making various efforts such as the extermination of crayfish harmful to aquatic plants and are also active in the management of surrounding natural forests. Through direct or indirect participation in the activities of such conservation groups, one gets a sense of just how delicately formed is the balance of nature. Such experiences could serve as the first step in developing a philosophy of coexistence between nature and humans.



The marsh covered with reeds and Indian rice and the surrounding woodland



Water birds resting on the marsh surface

Agriculture and Forestry in Pakistan (4)

Part 4: Karez farming in Balochistan

A karez is an underground water course irrigation system which channels ground water from the foot of the mountains to the plains using gravity. These irrigation tunnels have different local names, for example, in Iran they are known as qanats. In Pakistan, people have been practicing irrigation farming by karez since ancient times in the areas around Quetta, Kalat and Makran etc. in the state of Balochistan. The merit of a karez is that once constructed it does not require any dynamic energy to run it, and, because water is transported underground, loss of water from evaporation can be avoided. Karez were devised to fit the natural conditions of the arid land and have been used for thousands of years. It is an important system to consider in the quest for sustainability of arid land agriculture, as discussed in AAINews Vol.9.

In recent years, however, the decrease or depletion of water in the karez is becoming a problem in Balochistan, due to an increase in the number of well irrigation systems and the accompanying over exploitation of ground water. According to official statistics, around 1970 the acreage under karez irrigation in the Quetta region was 25,000-30,000ha, while land irrigated by well water covered some 5,000ha. The acreage under well irrigation gradually increased, and according to the agriculture census of 1990 the karez irrigation area was then about 13,500ha while the well irrigation area covered about 24,000ha. Behind this trend is population growth and the increase in cultivation of apples as an important commodity product.

As a counter measure to the problem of dwindling karez irrigation since the 1970s, the Balochistan state government has been promoting construction of 'ground water recharge dams'. Unlike so-called 'underground dams' made with water barriers under the ground, the ground water recharge dams look similar to conventional reservoirs. Where they differ from reservoirs (which attempt to retain water), ground water recharge dams aim to recharge ground water supplies by swiftly releasing their contents into the ground. In Balochistan, as of 1996, there were over 100 ground water recharge dams. Despite such efforts, however, because of the increase in water demand, a decrease in water recharge efficiency due to the accumulation of sand after construction, and destruction by flooding etc., the ground water recharge dams have not been serving their purpose and the ground water level continues to fall.

It is very time-consuming and expensive to construct new karez or maintain the existing ones. Therefore, it may be a natural that the irrigation scheme using wells, which is easier than karez, becomes more popular and widespread. However, at present there is no incentive for water saving to increase efficiency of ground water use. This is because with the unstable supply of electricity it is a rule that as much ground water as possible is pumped while there is electricity. Furthermore electricity consumers are charged irrespective of the amount of electricity consumed, making it more 'cost-effective' to use more electricity. Ground water in such dry areas as Balochistan is a very limited resource, and for its sustainable use, it is necessary to facilitate water saving efforts, to grasp appropriate use levels and to establish regulations that reflect the realities of resource availability. It is also necessary to improve the legal infrastructure, for example the taxation system in order that it should serve as an incentive to protect the valuable water resources.



Fetching water at the end of a karez



Ground water recharge dam



Cultivation of fruit trees and pasture

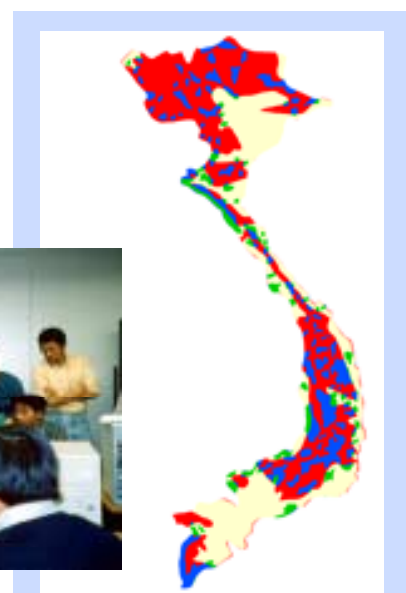
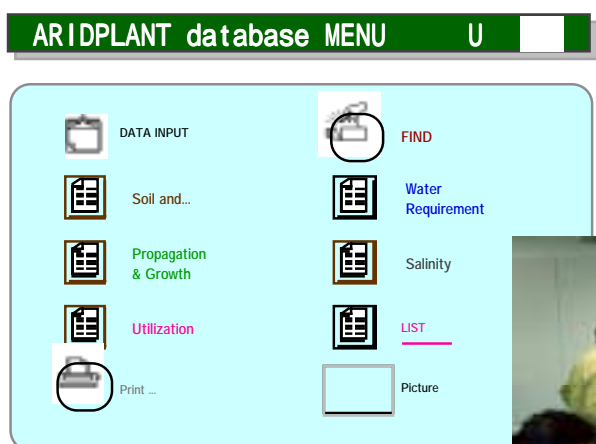
Workshop Report "Database as a Thinking Tool"

Following the July 1997 AAI workshop, "Root Designing", on 20th February 1999 AAI organized another workshop on databases and GIS, titled "Database as a Thinking Tool". (See AAINews Vol.12 for the report on the previous workshop.) This time we had a total of 20 participants from universities and development consultancies. The workshop was divided into two sections: in the first half we introduced the participants to various uses of database / GIS in a lecture format, and the second half was devoted to a practice session where the participants were divided into four groups to engage in small group discussions while actually using computers.

At the beginning of the first session a representative of the Applied Knowledge Co. Ltd., which provided us with the space for the workshop, gave a talk on the current use of databases in general. Following this, AAI staff introduced various databases we have used to date, categorizing them as statistical types, data search types and data mapping types. Here we titled the lecture, "The Growing Database", and explained in detail the process of development from simple databases to more user-friendly databases. Then, at the end of the first session, we introduced some examples of actual databases used as a tool, and discussed a few points regarding the future orientation of our database use.

In the second practice session, we had first anticipated that the participants, divided into four groups under the subjects of 'general database', 'card-format database', 'grid map', and 'GIS' respectively, would have discussions while actually operating databases and even adding modifications themselves. However, partly because the participants had different levels of experience with the software programmes used on this occasion, unfortunately we could not foster discussions that were quite as active as we would have wanted.

During the final summing-up stage, we came to discuss the concept of the 'thinking tool'. Picture the concept in terms of carpenters' tools: the work of different carpenters would differ even if they were using exactly the same tools from the same toolbox. It is the technique applied by those who use the tool that matters. The 'thinking tool' can also be compared with additional lines used for solving geometric problems. They are useful in contemplating the solution, and in this sense they are meant to assist in problem solving by showing the trial-and-error process. If one's trial-and-error process to reach a certain point could be replayed on a computer screen, it would be very useful as a 'thinking tool'. When a database is used as a 'thinking tool', the data can be displayed in various forms and from various angles, and it also enables one to make comparisons with other data sets. Results are to be found out through such processes of trial-and-error, and not simply from the raw data itself. We hope to carry on using our databases as 'thinking tools', by further improving and modifying their structures and display methods.



A computer screen showing changes in forested areas in Vietnam