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AAINews

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Activities of Ex-participants of the JICA's Vegetable Cultivation Course for Tajikistan （Small Scale Greenhouse Pilot Project）

Last year (2004) in July, I was invited to a follow-up session for the participants of the vegetable cultivation course for Tajikistan which was held from 2000 to 2003 in the JICA Tsukuba International Center. It was a great opportunity to see how the participants were applying what they had learned in Tsukuba in their country and to participate in the seminar organized by them on vegetable cultivation techniques.

Derelict iron piped greenhouse

Many greenhouses in Tajikistan used to be operated under Kolkhozes and Sovkhozes of the Soviet Union, however, since the collapse of the Soviet Union, they became run by individual farmers. Many greenhouses are currently out of action because of the high cost of heating them during the winter and because of maintenance needs which are difficult for individual farmers to manage. On the other hand, there is an increasing demand for fresh vegetables during winter, requiring the expansion of vegetable production in the country. With this background, the JICA participants conducted research on various greenhouse facilities, investigating cultivation techniques with low construction and heating costs, which meet the economic situation in their country. The research led them to information about a greenhouse that uses readily available materials such as straw as insulation to retain heat. This type of greenhouse can be constructed with the country's own technology and has a high heat retention function that is sufficient to produce vegetables in winter. However, due to the difficulty of mobilizing initial capital, the greenhouses were never constructed.

A greenhouse destroyed during the civil war

During my stay, prompted by discussions with ex-participants, I called for the formation of an alumni association of ex-participants which could act as a body to raise funding to support their efforts to apply the knowledge and skills they acquired in Tsukuba in their country. Within a short time articles for the association were prepared and submitted to the Ministry of Justice in Tajikistan. After due examination, the submission was approved and the association was registered on August 17 of the same year, as number 3,070, by the National Statistics Committee. After the registration, the association members became even more active than previously, organizing seminars to extend their technical knowledge to farmers and students.

In addition, the association members have made use of JICA's follow-up system, submitting a follow-up project proposal to JICA's Uzbekistan Office, dealing with renovation of dilapidated greenhouses to revive winter farming. The project aims to contribute to farmers' livelihoods by increasing their income from farming through the promotion of greenhouse cultivation to be realized through demonstration. The ex-JICA participants' plan is to construct small greenhouses, with minimum electric heating costs, making full use of compressed straw as insulation/heat retention material. The project budget for the first year is US$25,270 inclusive of greenhouse construction, demonstration cultivation costs and human resource and project operation costs. They requested the JICA to support them by covering a part of the amount after deducting what they mobilized elsewhere.

Activities of the alumni association of ex-participants of the JICA's vegetable cultivation course for Tajikistan have been expanding well, from research activities, organization of seminars, and incorporation of the association to even a submission of a project proposal to the JICA support scheme this year. Unfortunately, their greenhouse cultivation proposal was not accepted this year. However, I will continuously provide technical support to realize this project of the association and also provide my advice on application procedures. JICA's training scheme coupled with collaboration with activities of ex-participants, will enhance the results and achievements of the training.

(By Hasegawa, October 2005)

Case Study of Use of GIS by AAI

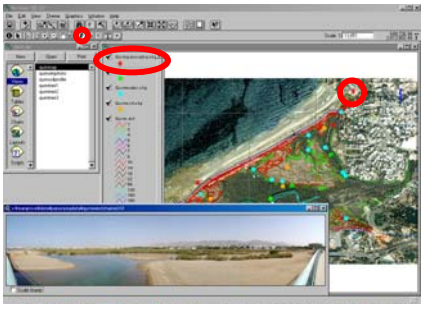
Part 4 – Case Study from Oman

Mangrove forests in Oman play critical roles, preventing coastal erosion, providing timber and firewood as well as non-timber products, recharging water resources, and conserving biodiversity. They also have a tourism resource value. Despite this, the mangrove area is diminishing due to cutting by local residents for firewood, charcoal and livestock fodder over many years. As the majority of Oman's land is desert and the country has little in the way of fresh water resources, expansion and sustainable utilization of mangrove forest that can propagate in brackish water is an important issue for the country. With this background, a study was conducted to formulate a master plan for the restoration, conservation and management of mangrove forests. The study included survey on natural and social conditions for each mangrove site, and based on this survey the sites were categorized into groups by different forest functions. Management plans were formulated according to different development types for each site category. In addition, a long-term monitoring plan was also formulated for each site. Survey results obtained in various field areas were compiled as a baseline for monitoring activities and the information was expressed on maps using GIS.

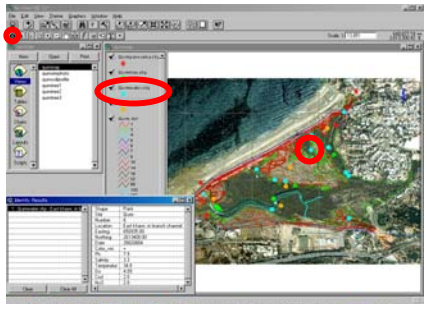
Due to the fact that there was a large variety of data, as below, we made sure that there was a certain uniformity in the data storage system, storing the same kind of data set in a folder with each site name at the beginning of each file.

Main Directory	Sub Directory		File
Mangrove	Project		Project files for each site generated using Arc View and a distribution map of the sites
	Image		Satellite images of each site using IKONOS or LANDSAT
	Data	Existing forest	Polygon data of existing forests made by GIS section
		General	General information such as administrative boundary, population, road network, distribution of major cities
		Fauna/Flora	Description of fauna and flora for each site
		Map	Result of topographical survey for each site, which was undertaken as a subcontract of this study
		Panorama	Panoramic photos taken from the fixed point observation spot for each site
		Photo	Photos of characteristic view, mangrove forest, soil conditions etc. for each site
		Soil analysis	Soil texture, color, and hardness of sampled soil at each site and state of ground water
		Soil profile	Description of soil profile of the sampling pit at each site
		Tree survey	Results of every tree measurement including height, diameter of sampled trees at each site
		Tree photo	Distant and close up photos of sampled trees at each site
		Water analysis	Result of analysis of sample water at each site (color, acidity, salinity, temperature, DO etc.)

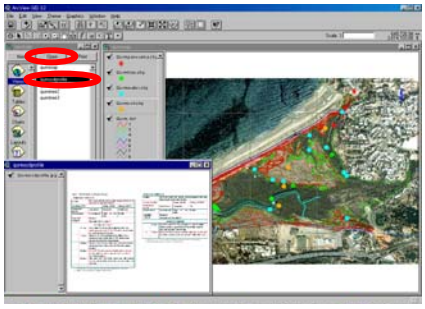
There were 21 target sites in 5 coastal zones. Therefore in GIS, it was designed that one could select a site from a page which showed all the sites or the sites of a specific zone. Once a site was selected, one could go to project files of the particular site. The project files for each site came with a background of a satellite image overlaid with topographical survey results. On the satellite image, we also indicated the panoramic photo shoot point, location of sample trees, and soil and water sampling points. By pressing an information button after selecting each site, results of every tree measurement and soil/water analysis are shown. By pressing a hot-link button, panoramic photos and tree photos can be viewed. Moreover, by selecting the fauna and flora, photo, or soil section from the view list, relevant images and descriptions are displayed. The following is an example.



Display of a panoramic photo



Display of water quality analysis result



Display of soil profile description

Through this work, as already mentioned in the first part of this series, we learned how important it is to shorten the distance between data collection and processing of the data in GIS. It is ideal for one staff member to take part in both works. If different staff deal with different parts of the work, it is necessary to ensure a very close exchange of information. Careful verification work by data collection staff is considered essential for constructing GIS. This time, we used GIS to display baseline data on maps. Refinement will be necessary to enable the system to display periodic changes as continuous collection of monitoring data is envisaged. It is important to understand that GIS does not end when constructed and that there is a need to keep improving the system as monitoring activities progress. Furthermore, with the understanding that it is important to promote data sharing with people and organizations without GIS software, our work includes utilization of internet map servers.

Changes in Pastoral Society in Syria and Resource Management

Part 4: Formation of regular migration patterns and human pressure on mountain grassland vegetation

In this series, we have repeatedly used the term “resource” without clear explanation. We now wish to clarify what we really mean by resource here. A resource is nature around settlements and areas of peoples’ activities, based on the premise that a resident community has a direct and solid relationship with nature. Nature here is soil, water, grassland and forests which form the essential foundation for farming and livestock rearing. Nature also is sometimes a target of gathering and hunting (including fishing) activities as main or auxiliary livelihood activities. Nature surrounding mountain villages which plays an important role as a resource for living, or which provides a means of livelihood in Japan’s farming and fishing villages, is also very close to the term “resource”. For local residents, it seems that nature did not only provide directly materials for living, but also was a safety net for those living with a limited amount of income. In this series, we would like to deal with conventional “resources” totally separately. These resources include petroleum, minerals, energy, grain for livestock and food, which are distributed as mass world wide backed up by industrialization and strong capital and purchasing power.

As we saw in the previous issue, the importance of the Abd Al Aziz (AA) Mountains has been rapidly recognized as the only spring grassland resource of a viable size in the area. As the agricultural development of Hasakah proceeded, the interest of livestock farmers moved to the AA mountains in order to secure scarce spring resources. This led to a new type of seasonal movement among some farmers who graze in grassland plains from Summer to Winter and move to the AA mountains in Spring. (In Winter, grazing is basically done around each village.) The livestock farmers flexibly and enterprisingly adapted their lifestyle to the changing environment, when faced by seasonally and spatially uneven distribution of fodder resources in the area. We believe that the disposition of the people was sustained by their nomadic and non-sedentary character. We already mentioned, in AAI News Vol. 45, that nomadic culture is an adaptation strategy of livestock farmers that has evolved to react to scarce and uneven distribution of resources in arid land.

Although livestock concentrated in the AA mountains in Spring, it did not lead to unlimited and unprincipled utilization. This is because the Baqqara Al Jabal had age-old rules for grazing land use originating from social norms such as a set distribution pattern on semi-nomadic villages based on 5-6 sub-tribal units and the demarcation of grazing areas between sub-tribes. These norms created a set pattern of movement by livestock farmers from outside the area. Looking from the resource utilization point of view, apart from grazing, there is another form of use pressure on the grassland, namely the collection of firewood by livestock farmers for bread baking. People rely on shrub species for firewood which is the dominant species of grassland vegetation, which results in constant resource pressure on grassland. Examining the issue in more detail, one finds selective harvesting of shrubs, just like the conscious selection of grazing areas, a phenomenon that is highly interesting from an ethno-botanical perspective. Although the AA mountains have constantly been under pressure from two human activities, namely grazing and firewood collection, the utilization came to form highly self-regulated patterns. This is because of the socio-economic demarcation of the mountain area for living and grazing between sub-tribes and a liking and selection for resource use. Regular use patterns have been formed through the process of moving from a nomadic to a more sedentary lifestyle. In the next issue, I will introduce orderly grassland vegetation of the AA mountains, which was created through changes caused by the regulated human pressure.

Shrub harvesting in the mountain plains

Transporting firewood home with a donkey

Bread baking using tannor oven

Mini Series: Irrigation and Water Saving in Arid Land – Case Study from Field Work

Part 2: Comparison between experimental research results and the realities of farming

In the last issue, we introduced theoretically calculated crop water requirement (CWR) and the actual irrigation water amount of farmers, using examples in Syria. In this issue we would like to compare the experimental results of research at the Irrigation Research Center and actual results achieved by farmers. For the results of farmers' work, we used actual results of demonstration plots. Demonstration plots normally are plots managed by relatively well-performing farmers, therefore, the results of ordinary farmers are considered to be inferior.

The table below summarizes water use and yields of cotton at both the Irrigation Research Center and at demonstration farms, both of which are using traditional basin irrigation and water-saving drip irrigation methods. Based on a water use of 6,113 m^3/ha which is the experimental results of water use of drip irrigation as 100, demonstration plot A's water use is 136 (8,321 m^3/ha) and demonstration plot B's result is 153 (9,351 m^3/ha). The fact that with the traditional basin irrigation, water use at demonstration plots is less than that used at the Irrigation Research Center implies that farmers are not yet familiar with using drip irrigation methods. Furthermore, the water saving rate with drip irrigation was 58% and the rate of yield increase was 33% at the Irrigation Research Center. In contrast, at demonstration plots, the water saving rate was 14-39% and the rate of yield increase was 11-15%.

Comparison between the results of experimental research and demonstration plot

Item	Experimental Results		Demonstration Plot Results A (N=3)		Demonstration Plot Results B (N=21)	
	Basin irrigation	Drip irrigation	Basin irrigation	Drip irrigation	Basin irrigation	Drip irrigation
Water use (m^3/ha)	14,446	6,113	13,565	8,321	10,925	9,351
Water saving rate (%)	-	58%	-	39%	-	14%
Harvest (kg/ha)	3,337	4,516	3,680	4,079	4,330	4,993
Rate of harvest increase (%)	-	33%	-	11%	-	15%
Water use efficiency (kg/m^3)	0.23	0.74	0.27	0.49	0.4	0.55

It is generally known that there is often a discrepancy between experimental results and actual results at ordinary farms. In order to demonstrate the best performance, the gap between results at well managed experimental plots and ordinary farms (with the exception of advanced and/or innovative farmers) is inevitable. However, it is the role of "extension activities" to narrow this gap as much as possible. There is no arguing that it is highly important to disseminate experimental results to farmers in a way the information can be utilized.

However, according to a survey of farmers in Syria regarding the reality of agricultural extension, 63% of the responding farmers cited agricultural material shops as the source for acquiring technical assistance, and only 15% cited agricultural extension workers. In addition, regarding the frequency of accessing public technical assistance by extension workers, 68% responded "extremely rarely" or "never". As for the question regarding the accessible technical services, 76% responded "no assistance". This indicates that the public extension bureau is not very actively engaging with farmers.

In order for agricultural extension organizations to be able to implement effective technical extension activities, it is necessary for those who are engaging in experimental research to set up experimental themes based on farmers' needs and the reality of farming, and conduct the experimentation and provide feedback of results to farmers. However, much experimental work has a tendency to experiment for the sake of research. It is extremely important for research organizations and agricultural extension sections to ensure close cooperation to mitigate this negative trend.

Neatly maintained experimental farm in the Research Center

An example of an ordinary farm – obviously inferior to the experimental farm

Cotton cultivation at a demonstration farm