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# AAINews

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## *Revitalization of Communities: Report From Koura-cho, Shiga and Miyama-cho, Kyoto*

We recently had the opportunity of visiting Koura-cho in Shiga and Miyama-cho in Kyoto, and seeing the activities of "Ground Work", the community revitalization project which relies for its success on the participation of local residents. Under the banner of slogans such as "Dashing town of many streams" (Koura-cho) and "A village of thatched houses and streams creating original views of beautiful Japan" (Miyama-cho), residents and local authorities are working jointly on improving the living environment and at the same time promoting local communities. These two particular efforts are often cited as successful examples.

Koura-cho, which has a population of 8,500 people, is located to the east of Lake Biwa and south of Hikone City. Although the town produces high-quality rice, it has always experienced difficulties securing sufficient supplies of water. As a result, local people have a special feeling about water, and this plays an important role in the revitalization of their town. The residents' awareness of water and the environment was further raised after a confrontation emerged around 1980 between public works and landscape conservation. Since 1990, each community has established a "village revitalization committee", and public environmental projects concentrate on the creation of a good living environment in order to establish the concept of a "water town", making the most of the clean water and rich greenery that the town possesses. As a result, the whole town is currently characterized by the sort of scenery which conjures up images of a water-front park. Miyama-cho is located to the north of central Kyoto. It has a population of 5,500 people and is about one and a half hours away from Kyoto station by car. Around 96% of the town is covered with forest. In 1989, a "village revitalization promotion committee" was established in each community. These have been working on a tourism development that fully features traditional thatched houses and the area's rich natural resources. The concept of "green tourism", which promotes exchanges between local people and visitors from urban areas, is encouraged and efforts are also being made to create distinctive local products such as soy-bean paste, konjaku and local breeds of chickens.

Each local area has its own unique characteristics. These need to be fully utilized in the process of the towns' revitalization. At the same time these factors set limits to the type of activity that can be carried out. Therefore, efforts for town revitalization must start from these unique characteristics. Given this dependence upon unique circumstances, it may be difficult to create a universal manual for town revitalization, however there is one common point in the efforts of the two towns - town revitalization begins when local people themselves rediscover the positive aspects of their town. Also in both cases, although many activities are conducted jointly by local residents and governments, each is more of a local authority-led effort conducted by enthusiastic local government employees.

Another characteristic of these activities is their efficiency. Their small-scale nature makes delicate approaches possible. For instance, in Koura-cho, each house has installed a simple device made of charcoal filled bamboo to purify household effluent. The idea is to clean water at the nearest point of discharge, when the contamination is not yet too severe. Another important aspect to the success of the schemes is ensuring that exchanges between locals and tourists take place at an appropriate scale. The revenue from "green tourism" has become significant in Miyama-cho. Although the more tourists that come, the better it is economically, people here seem to be fully aware of the possible losses that uncontrolled tourism could incur (as in the case of Kiyosato ?). These examples provide important lessons not only for community revitalization efforts in Japan, but also for assistance for developing nations. (Onuma and Koto in Koura-cho and Miyama-cho)

Household effluent purification device (Koura-cho)

A cluster of thatched houses (Miyama-cho)

# Agriculture and irrigation in arid lands: From a viewpoint of sustainability (6)

## Part 6: Problems Arid Regions Face and Means of Making Full Use of Arid Conditions

In this series, we have presented various examples of traditional farming methods in arid areas, with special reference to "sustainability". What has been noticed during our visits to arid areas is that sometime measures taken to increase productivity result in the opposite effect. For example in many oil producing nations, drip irrigation systems are introduced to increase the efficiency of limited water use and to grow plants using a water saving method. However, because the irrigation water contains salt, salt accumulates on the ground surface and underground water tables at irrigation wells sink and their water quality deteriorates. As a result, some cultivated fields are abandoned. In some coastal agricultural areas, sea water has intruded ground water zones due to over pumping of underground water, which has then resulted in a dramatic rise in salt concentrations in some well water. In areas where irrigation agriculture is conducted from an ample river water supply, as is the case in Syria and Pakistan, salt accumulation and water logging have become major issues. These are typical examples of negative effects brought about by modern agricultural methods in arid regions. Of course, so-called "traditional farming methods" have their own problems, which are often the reasons for the introduction of "modern" methods. However, isn't it necessary to evaluate development plans and their economic effects not only bearing short-term productivity in mind, but also taking sustainability into full consideration ?

Regarding the future direction of arid agriculture, intensive farming is sought in order to effectively utilize limited water resources and limited high-quality arable land in arid regions. For instance, the introduction of intensive horticultural technologies will be an important task. These offer an alternative way of utilizing vast areas of land for extensive agriculture. In this case, generally in arid regions, an increased percentage of land is used for livestock breeding when agricultural production becomes difficult. This is a factor one should not forget. It is necessary, especially in arid regions, to plan and implement projects that harmonize agriculture, forestry and fisheries, including livestock breeding.

Moreover, setting aside the important issues of irrigation and securing water resources for agriculture in arid regions, there are other problems unique to these regions. In order to cultivate under severe climatic conditions in arid regions, fields and crops have to be protected from shifting dunes. Therefore, the creation of wind/sand breaks and the development of sand dune fixation technologies are extremely important. Also problems of salt accumulation and water logging arise when water with high salt concentrations is constantly used for irrigation or where the underground water table is high. To cope with these potential problems, knowledge and technology regarding drainage is important. Furthermore, the natural vegetation in arid regions is often drought-resistant and/or salt-resistant. It is also important to promote basic studies concerning the physiology and ecology of these plants, and apply the knowledge that is thereby gained to the field of plant breeding and biotechnology.

It is obviously necessary to attempt to produce crops by creating favorable conditions, and, as far as possible, by eliminating and overcoming what are perceived as bad conditions; in the case of arid regions, these are high temperature, drought and strong winds. At the same time, there exists an alternative way of thinking that considers these conditions more positively as unique to arid regions. In arid regions, crops are produced under conditions which precipitate high evaporation rates. The results are vegetables/crops that have concentrated levels of minerals etc. It is this concentration of ingredients that forms the basis of the concept of "nutrient rich vegetables". In particular, in the case of medicinal plants, this has even more important implications. If one tries to artificially grow plants which originally live in severe arid environments in a milder environment and with a better water supply, in many cases their medicinal quality becomes much less efficacious compared to the same plants growing in the wild. This is because plants are not producing their medicinal components to benefit humans, but are instead accumulating special ingredients in their bodies to protect themselves from drought.

Because of the points described above, AAI began to make efforts to create a data base of plants unique to arid regions, and to collect the seeds of such plants. Dealing with endemic plants creates another big challenge, namely, that of understanding the relationships that exist between the plants and human culture/traditions of the area in which the plants occur. Appropriate technologies based on these culture/traditions have been kept alive in local areas for many years. In the field of overseas assistance and technical cooperation, employment of appropriate technologies and intermediate technologies are being advocated. It seems that what leads to improvements in local people's lives is a combination of scientific analysis, evaluation, and the improvement of those indigenous technologies that are rooted in particular regions.

# Nature and Agriculture in Syria (6)

## Part 6: Future Challenges

In the last five parts in this series we have chiefly examined agricultural systems unique to each region of Syria and the environmental issues they face. In this part, we have compiled a chart of current environmental issues and possible counter measures, in order to list future tasks that need to be undertaken in order to utilize Syria's natural resources sustainably.

| Items | Current Environmental Problems | Possible Measures |
|---|---|---|
| Water Quality Conservation | Contamination of river and underground water due to agricultural chemicals, household and industrial effluent. Impact of contaminated water on agriculture and household water supply. | Implementation at the national level of measures to counter water contamination. Employment of simple household effluent treatment systems at the regional and residential level. Water quality improvement and improvement of waterside environments by promoting water access improvement projects. |
| Soil Conservation | Soil erosion and degradation on the steep slopes of coastal areas. Wind erosion and shifting sand problems in the inland desert areas. Soil degradation due to continuous exploitative agriculture. | Transmission of traditional stone walling techniques as a means of preventing erosion, and water harvesting. Promotion of afforestation activities for erosion control, rain water cultivation, and sand fixation. Transformation of crop rotation systems. |
| Salt Accumula-tion | Intrusion of sea water into underground water supplies due to over pumping. Inappropriate water management. Seepage from irrigation channels. Poor drainage. Overuse of chemical fertilizers. | Thorough implementation of appropriate water management systems by organizations such as water management co-operatives. Implementation of appropriate irrigation and water seepage measures in accordance with amounts of water consumption for different crops. Maintenance of drainage channels. |
| Women's Issues | Physical burdens on women such as water fetching, pest control and agricultural labour. Lack of understanding on the part of men regarding activities to improve living conditions. Stagnated agricultural income. | Reduction of women's burdens by easy measures such as the introduction of simple labour saving devices. Development of local produce based on detailed market surveys. Activation of handicraft and food processing industries. |
| Badia | Desertification caused by inappropriate land use (deterioration of land due to "gamble agriculture", deterioration of natural vegetation due to expansion of land off limits to grazing.) | Experiments on improvement of water harvesting techniques and vegetation rehabilitation. Implementation of practical activities in ways that co-exist with the nomadic lifestyle. |

In Syria, tourism development based on historical heritage will continue to be a very important industry. In the future, it will be an important task for tourism development and the recreational activities of residents, to maintain waterside environments, promote water quality improvement, and improve people's access to water along the river banks. Water quality improvement activities at the local level, such as household effluent treatment using charcoal, are desirable. Also, in order to realize the transmission of traditional stone walling techniques, the promotion of appropriate water management on the regional level and the reduction of women's labour, activities at the local residential level will play an important role. Furthermore, it is impossible to discount nomadic people's lifestyles when considering effective use of Badia. In this way, to sustainably use natural resources in Syria, it is necessary to promote activities on a regional basis and with the participation of local people. It is our strong hope that Japanese assistance will embrace these ways of thinking and will involve co-operation in a way that will truly contribute to the improvement of people's lives.

**Water pollution in rivers has become a major issue all over Syria**

**Daily water fetching is almost entirely carried out by women**

# Workshop: Designing Roots

On July 2, 1997, AAI held a workshop titled "Designing Roots". A total of 30 participants from universities, forestry organizations and construction companies took part. In the morning, the idea of "designing roots" was introduced using a photo database. In the afternoon, participants tried hands-on work using actual equipment.

Even in dry sand areas which are constantly moved by wind, if you dig 1-2 m below the surface you will find small amounts of moisture. This subterranean moisture is relatively stable regardless of seasonal fluctuations in ground surface moisture. Trees naturally growing in this type of area extend their roots to this deep moist layer. However, even a drought-resistant seed can only just manage to sustain its life with this amount of water. In order to grow, there are different root system at the 20-40 cm level which spread radially over distances of more than 10 m. These roots collect water efficiently from infrequent rain. In short, there is a division of labour: deep roots support life, and shallow roots play a role in growth. This is how trees in arid regions survive.

When planting trees artificially, the first task is to ensure survival of the plant by ensuring its roots reach the level characterized by stable moisture as soon as possible. We can leave considerations of growth to the parallel roots in the shallow level that collect natural seasonal precipitation. If possible, it is a good idea to water the plant from time to time. Anyway, the important thing is for roots to reach the deep layer as soon as possible. In this respect, how about growing long roots before planting? Fortunately, plant roots are highly adaptable. We have found out that it is possible to grow roots one or two meter in length, if we try.

The difficult bit is digging a hole sufficiently deep to plant such long roots. The ease with which sandy soil collapses makes the planting task even more difficult. However, even in these difficult circumstances there is a way to cope; namely by applying a device made from vacuum cleaners which employs two long tubes. The first fat tube, which covers the second thin tube, prevents the sandy soil from collapsing. The thin tube inside the fat tube vacuums sand out. The space between the two tubes acts as an air supply pipe. In early days of innovation, this device was only used in sandy soil, however, the technology has been improved and can now also be used in hard clay soil.

The basic idea for the technology was consolidated several years ago, and a number of experiments have been conducted in the Middle East, as a part of overseas assistance projects concerning arid agriculture and greening of the area. In May 1997, we held a workshop in cooperation with staff from the UAE's Afforestation Bureau which has been enthusiastically promoting plantation projects in desert areas. This was the basis of our workshop in July. A workshop is not just a one-way lecture. It is a gathering of people who interact with one another in order to find something new. We hope that this workshop does not end up with just one gathering, but will instead lead to the creation of networks among the participants that will help further examination and/or improvements in the field of root design. As a result, we hope that the idea of designing roots will spread in many directions to many people, leading to the improvement of afforestation technologies in arid areas, a reduction in labour and water use, and an increase in the number of self-standing trees.

**Digging device made from a vacuum cleaner**

**Long-rooted and ordinarily-rooted saplings**

**A scene from the workshop (in the afternoon)**