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AAINews

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5th Year of the Tsukuba Training Courses

In early April, the time of cherry blossoms, we held the annual cherry blossom viewing event under cherry trees in the garden of the JICA Tsukuba International Center. We had a very jolly time dancing and playing tennis under perfect weather with the participants of the Vegetable Cultivation Technology II Course (Vegetable Course) and the Course on Vegetable and Upland Crops Cultivation Techniques for Southern African Countries (Southern African Course).

For AAI, this year is the fifth year of the JICA training courses in Tsukuba. In addition to the Southern African Course which we have been running for some time, we were commissioned to conduct another course called the Vegetable Course. At present, we locate 4 trainers in Tsukuba and deal with 21 trainees from 16 countries. For the Southern African Course an extension of the course duration was approved from this year, which enables us to teach techniques for crop rotation much more thoroughly. Furthermore, in the Vegetable Course, we teach techniques for seed production, vegetable cultivation with high production and quality, as well as environmentally friendly vegetable cultivation.

In recent years, a new policy for the Tsukuba training courses was formulated. The new policy emphasizes the need not only for nurturing human resources that contribute to regional development, but also for those courses to find solutions for problems in particular regions. Given this, it is expected that feasibility action plans are formulated during the training courses which will translate techniques acquired in training to actual actions on the ground. In order to respond to this, at the beginning of each course, participants are asked to present a job report describing regions they work in and their concrete tasks, in addition to the existing country report. In this way, trainees are able to clarify problems they face in their job, and try to find solutions in the form of action plans at a latter stage of the training. During our follow up investigation this year, we witnessed that the trainees from Botswana and Namibia have already started implementing some of the activities in their action plan. Seeing at first hand the implementation of the action plan that emanated from the training is a great joy for us trainers.

Having said the above, we must be careful not to simplify the matter, saying “problem solving training courses equals presentation of an action plan.” Many problems that emerged from the trainees’ job report are to do with low production of crops. There is a host of reasons for not being able to maximize potential productivity of crops and they are complicatedly intertwined, therefore there is often no simple solution. For the trainees to address their problems, it is essential to enhance their knowledge of growth diagnosis and remedial measures, and to improve the techniques and capacity to teach their fellow countrymen and women on the ground. We strongly feel that human resource creation and problem solving approaches are actually the two sides of the same coin. Therefore in our daily training activities, we strive to find ideas for solving the problems that our trainees face, through various activities. In this year’s Southern African Course, we hope to discuss and consolidate with our participants the important elements of productivity such as improvement and retention of soil fertility, utilization of useful regional resources, and circular utilization of organic substances. The results of these discussions will lead to further improvement of our training. Seeing this year’s trainees, we feel that we can find some new triggers for improvement. We would like to continue with training activities, hoisting the flag “learning with trainees and jointly creating improved courses” as an ideal.

By Hasegawa from Tsukuba (currently tormented by back ache due to fruitful practical sessions in cultivation!)

Cherry blossom viewing at TBIC

Trainees sweating from working in the field

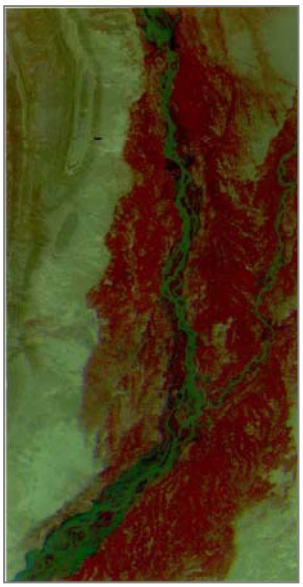
Case Study of Use of GIS by AAI

Part 2 - Case Study from Pakistan

We have run GIS related stories from time to time in AAI News. In the series on analysis of remote sensing images, we introduced ways to obtain, analyze and utilize satellite images. In addition, in the mini-series on databases, we introduced GIS as a tool for thinking. In this series we will introduce various examples of GIS use in the field, and will focus on examples in Pakistan in this issue.

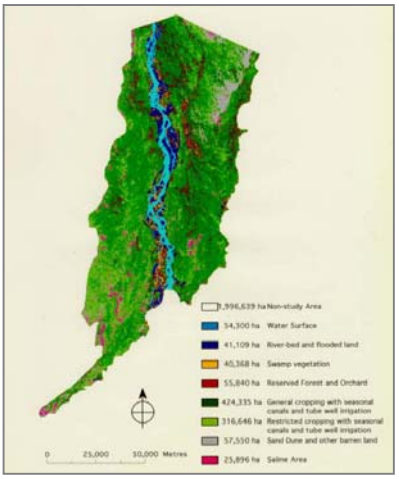
The majority of the land in Pakistan is arid or semi-arid, which necessitate irrigation facilities for agricultural production. In the Punjab Region, which is the center of the country's agricultural industry, there has been a rapid decrease in the effectiveness of irrigation due to the aging of the facilities. The improvement of such irrigation facilities has been strongly sought. One of the 16 such facilities nationwide is the Taunsa Barrage which has deteriorated badly. In 1997, a feasibility study was conducted to formulate the "Taunsa barrage irrigation system rehabilitation plan". There are major obstacles for regional agricultural development; soil erosion and floods caused by surface water from the Sulayman Mountain Ranges on the right hand bank of the target area, and shifting dunes penetrating into the region on the left bank. In irrigated areas, water logging and salinization are causing major damage. These facts prompted development of a present land use map using satellite images and the results of physical investigations on the ground. The map clearly shows the location of shifting dunes, areas where salt is accumulating, as well as distribution of wetlands and natural woodlands.

Data search was commissioned to the Remote Censing Technology Center, designating conditions such as the types of satellite, censors, target areas, and observation years. We chose necessary data from search results. For this particular development survey, we purchased two scenes of LANDSAT/TM data that jointly cover the whole target area. We partially overlaid the two scenes to make one scene and we cut off excess areas. Then, using red, green and blue for bands 4,3 and 2 respectively, we created false color images. In these images, areas with high vegetation are shown in red, and one can see, in the map on the right hand side the way irrigated fields spread along the banks of the river. As a method for analyzing land cover categories, we first tried to use the maximum likelihood estimate as a classification method. This method chooses certain points that represent each category of land cover, and classifies areas by choosing pixels with similar characteristics. However, with this method, the result showed too much forest cover and unrealistic salt accumulating areas. Given this, we conducted detailed ground truth field work, carrying with us the false color images and GPS. We repeated the activity of confirming the difference between the various colors on false color images, as well as the difference between actual land cover through physical investigation. Based on this investigation method, a very realistic present land use map was created using the level slice method.



False colour image of the study area

What we learned through this work was the importance of tenaciously walking around actual areas with maps and a GPS in hand. Initially we could not easily distinguish forest vegetation from wetland vegetation on the maps. Therefore, we visited all the forests existing in the study area and marked on the false color images. Then, we determined the distribution of forest vegetation, through repeated trial and error. In the same way, we also determined sand dunes and salt accumulated areas. This trial and error process taught us that both field work and analysis on computer should really be done by the same person. The major point of satellite image analysis is to express the information obtained in the field work accurately on the screen. In addition, by taking out irrigated areas from the image of the study area, we made it possible to instantly analyze area sizes per category from the number of pixels, using MF Works software. This in turn enables us to verify the map from other information such as existing area size statistics indicated in a land use map and forest distribution map. In other words, if a map is created which is realistic in terms of distribution but not accurate in terms of area size, we now have the option to make further adjustments.



Actual land cover classification map created and based on the results of field work

Changes in Pastoral Society in Syria and Resource Management

Part 2: Baqqara Tribesmen and the Abd al Aziz Mountains

It has been less than 50 years since the Baqqaras became sedentary, considering that the time they first started to settle down was when the pastoralists started to build sun dried brick houses as they started incorporating in their livelihood modern agricultural methods to grow barley in the Abd al Aziz (AA) mountains. The history of their sedentary life is short and it is not accurate to say that they have completely become sedentary. Many still move seasonally with their livestock. This means that the Baqqaras are not completely sedentary. During the last half century there were a number of significant changes affecting various aspects of their lives. Firstly, the road network was developed and the use of cars and buses increased. As this tendency developed, the relative status of camels that had been the important means of transport was downgraded and many people abandoned camels completely. Secondly, schools were built in villages which improved education for children. Thirdly, access to markets became easy, which increased shipment of milk and milk products to urban markets. Lastly, their eating habits changed as they had more chance to eat vegetables that were bought with cash and each household started baking tannour bread on a daily basis in an oven next to the house. There seems to be increasing self recognition that they are "hadar", urban dwellers, rather than nomadic "Bedou". However, the major difference between other city dwellers and the Baqqaras are the still existing strong ties and sense of belonging to their own tribe whose members share the memories of common ancestors. Although the power of the tribal headmen as social leaders has significantly weakened as has their political influence, they still have remarkable abilities to mediate disputes between tribal members.

In the 19th century, the Baqqaras were based along the Euphrates and farmed easy crops such as maize in summer using the water from the river before moving to rangeland in winter. In the 20th century, they expanded their territories northwards into a tributary called the Khabur River. Their population was distributed from Deir Ez Zor in the south and to Ras Al Ain, at the border with Turkey in the north, as well as from Raqqa in the west to the eastern bank of the Khabur River in the east. The Baqqaras presently are divided into 27 sub-tribes with a headman for each of the sub-tribes. However, more generally, they are divided into two groups called the Baqqara al zor and the Baqqara al jabal. The population of the Baqqara al zor largely spreads from along the Euphrates in Deir Ez Zor Prefecture to the southern foothill of the AA mountains. The Baqqara al jabal, in contrast, is a group that expanded from the AA mountains to the northern part of Hasakah Prefecture, by going up and down the upper tributary of the Khabur river. Their expansion sometimes led to disputes over rangelands and with other tribes, but the Baqqara al jabal steadily established their expanded territory. In the late 1950s when modern barley cropping spread in the region, the members of the Baqqaras and their sub-tribes settled down in areas which were allocated to each household. Where there are mountains in the area of allocated land, people maintained their usual pastoral-system oriented livelihood, and if there were rivers, some changed their livelihood to cultivation of wheat and cotton actively introducing irrigation.

Land demarcation of tribes practicing pastoralism-oriented livelihoods is not as clear as those with cultivated land. However, even though many demarcated rangelands overlap one another, there is a clear demarcation based on social divisions with sub-tribes as a unit. In the AA mountains, 5-6 sub-tribes of the 27 Baqqara al jabal live on individual plots. In the next issue, I would like to go into details regarding land use in the AA mountains, focusing on the Baqqara al jabal in transition in the settling process as observed by the author between 1993 and 1996.

Day pastoralism

Water point at a village

Renovation of sun-dried brick house

Mini Series: Sequel to "Designing Roots"

Part 2: Development of appropriate technology following long-root cultivation

In the northern edge of the desert in Sahel, there are deserts, dunes, stony plains and flat plains that are the remains of the bottom of dried lakes. Going a little further southward, one starts seeing farm land with crops that only require a small amount of annual rainfall, and seasonally used rangeland and woodland. However, many such farmlands and rangelands, which have been used repeatedly for millennia, are noticeably degraded having lost their topsoil. Tominian is in such an area. It is situated near the border with Burkina Faso and you can reach it from the Capital City Bamako, going on a major road to Mopti, leaving the Niger River at Sėgou and go eastward through Bla and San. The NGO Saheru-no-Mori (Forest of Sahel) has been working in the town to restore natural vegetation and to promote afforestation and the greening of the area, making use of their experience with long-root cultivation.

The biggest success factor of long-root cultivation is how we can make roots reach permanently moist soil layers as quickly as possible. Once roots reach the layer, there is no need for watering and the plants will still keep growing. In Tominian, we are experimenting with the following method, attempting to attain similar effects as long roots, using ordinary saplings or young saplings.

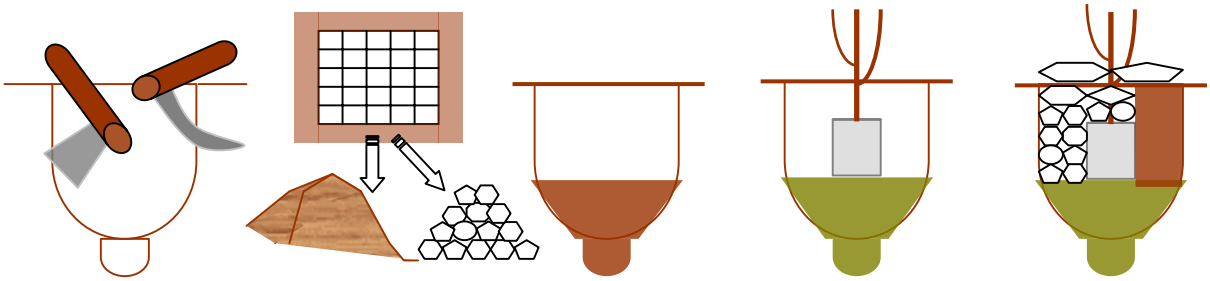
(1) Dig as deep a planting pit as possible using locally available tools

(2) Divide the dug soil between fine soil and pebbles by sieving

(3) Place fine soil mixed with livestock dung at the bottom of the hole

(4) Pour ample amounts of water in the pit and plant the sapling

(5) In order to ensure that water reaches the deep part of the pit, create vertical pebble layers and evaporation preventing mulch



By planting in this way, we can not only obtain the same growth efficiency as planting long root saplings, but also limited rain drops will be fed directly to the growth area of the root system without waste. In order to effectively trap rain water, it is important to observe detailed micro topographic conditions. Therefore, it is useful to mark areas that are even slightly lower than surrounding areas by walking around the planting area after rain. Sometimes there are no pebbles in soil dug from planting pits. It is important to identify places where pebbles and stones can be found. As we explained when we introduced the use of pebbles and stones in arid areas in AAI News Vol. 8, the use value of pebbles and stones for improving water permeability and mulching is very high. Rather than sticking to a particular technology, it is increasingly essential, in development assistance, to create processes to develop technologies appropriate for particular areas, by combining various technologies.

Digging a pit using locally available tools

Effective use of pebbles and stones

Sieving dug soil