

## Kind of Tree-planting Activities in United Arab Emirates

### Part 6: Problems to be overcome in future

Afforestation and agricultural development projects have been implemented vigorously in UAE according to the President's policy "Profit gained by selling oil drilled from the ground has to be returned to the soil". A dam project has been carried out accordingly in order to preserve the groundwater in mountain area and utilize it for irrigation projects. Desalination plants have been constructed at power stations which made it possible to supply fresh drinking water throughout urban area. At the same time, processed drainage water is used for afforestation projects in urban area.

However, sea water is intruding into the groundwater in the coastal area, and salinity of well water is increasing accordingly. The level of groundwater is declining and the quality of the water is getting worse, which means that recharge of groundwater is too slow to catch up with the speed of the development. In some area, farmers abandoned cultivation due to drying up of groundwater and accumulation of salts in the field. It suggests us that it is very important to consider availability of water resources before planning and implementing development project so as to make the project sustainable. Afforestation projects also have to be implemented as a part of sustainable development. Thus, the following approach is considered effective.

#### 1) Zoning and selection of appropriate land for afforestation

Most of the land in UAE is desert. Oman mountains run in the east part of the country, and gravel plains lie between mountains and dunes. In dune area, dunes and interdunal plains form long and narrow strips. Moreover, salt accumulated land called Sabkha occupies a vast area. We can recognize the vegetation is distributed according to the characteristics and the situation (geographical features, soil, climate etc) of each area. For example, *Prosopis cineraria* spreads mainly in dune area and *Acacia tortilis* dominates mainly in gravel plain area. Both can be also seen at where sand is invading into gravel plain. It is important to delineate the area according to vegetation and natural conditions in order to select appropriate land for development projects. To study species and cultivation method that will suit the selected land is also very important. For proper zoning, it is very effective to utilize Remote Sensing Analysis as well as investigation in the field.

#### 2) Potential of natural vegetation

In large scale afforestation projects, trees are planted at 7m intervals. This density is determined for the facility of irrigation. However, appropriate density actually differs depending on the conditions of soil. For example, even on a single dune, density of *Prosopis cineraria* differs according to the position. It suggests that the conditions of soil and water determine the species and their density in the area, and as long as the density of afforestation is within the capacity of the land conditions, irrigation is basically not necessary. Thus, it is very important to plan afforestation projects based on understanding of potential of natural vegetation and environmental conditions in order to attain sustainable development.

There are so many problems regarding afforestation in arid lands such as water resource development, irrigation technology, how to fix dunes, tree planting method etc. It is necessary for UAE to spend budget on basic research and experiment and make use of the outcome not only for UAE but also for other countries trying to prevent desertification. And also, exchange of technologies (i.g. introducing afforestation for fixing dunes in Yemen to UAE or mangrove study in UAE to other countries) should be encouraged and promoted.