Plants in Arid Lands and Their Utilization (7)

We have been describing about the relationship between natural vegetation and topography around Al Ain in UAE. Our objectives are to study the vegetation as indicator plants which can give us various information such as the characteristics of soils or groundwater of the area, which could be useful to select appropriate land/area for afforestation or agricultural development. The summary of the results is shown in a table below.

Topography	Major vegetation	Characteristics	Conditions	Land Use
Mountains	*Zizyphus spina-christi*	Xerophyte, Edible fruits	Steep slope, Rocky plain	None
	Acacia tortilis	Fodder		Dates farm
Alluvial fan	*Hammada elegans*		Plain, Deep ground-water (top of the fan) Fine soils (end of the fan)	Farm, Afforestation, Urban area, Oasis
	Rhazya stricta	Weak against saline water		
Dunes	*Cyperus conglomeratus*	Fodder, long root	Even-grained sand with some moisture	None
	Hammada elegans			Grazing
Interdunal Plain	*Zygophyllum hamience*	Halophyte	Plain Fine soils	None
	Prosopis cineraria	Fodder		Afforestation
Sabkha Coast area	*Salsola baryosma*	Halophyte	Plain Saline soils	None
	Avicennia marina	Halophyte, Fodder		Fisheries

The field observation indicates the relationship between vegetation and land use as follows;

1) The area where Acacia tortilis grows is not used for farming and left wild.
2) Prosopis cineraria grows near farmland.
3) Rhazya stricta grows on gravel fields where other vegetation is hardly seen.
   Level of groundwater is deep.
4) Cyprus conglomeratus can be seen only in dunes. Camels are often grazed in the area.
5) Interdunal plains are suitable only for afforestation. Hammada elegans are often seen.

From the information above, we can bring out the following conclusions.

1) The plain area where Prosopis cineraria grows could be suitable for agricultural development.
2) The area where lots of Acacia tortilis or Rhazya stricta grow is not appropriate for agriculture.
3) It is difficult to decide the place where Hammada elegans grows would suit for agriculture or not, however, it could be considered as afforestation area.

In order to select the site for agricultural development or afforestation, studies on topography, vegetation, soil, and groundwater are very important. Nowadays, remote sensing analysis has been very popular for this kind of study. It could be indispensable for successful project planning to formulate the plan based on such detailed studies. However, in some cases, the selection still depends on the indigenous knowledge which has been recognized by local people traditionally. They have their own indicator plants to judge the environment. The method which we described in this series is rather rough, however, it is simple and easy to adopt, so it could be useful as a land classification method, specially for local farmers. To improve the method, we should conduct additional examinations such as; 1) to check the level of groundwater and the taste of well water, 2) to observe soil profile, and 3) to ask farmers how they select the site for agriculture.

Now we have our staff in Syria, Pakistan, or Oman, and we would like to continue this kind of study in those countries as well. At the same time, we would like to conduct more detailed study on soil and vegetation of certain area. Conjunctive use of traditional method and modern technologies such as remote sensing analysis could be effective to classify the land more appropriately.