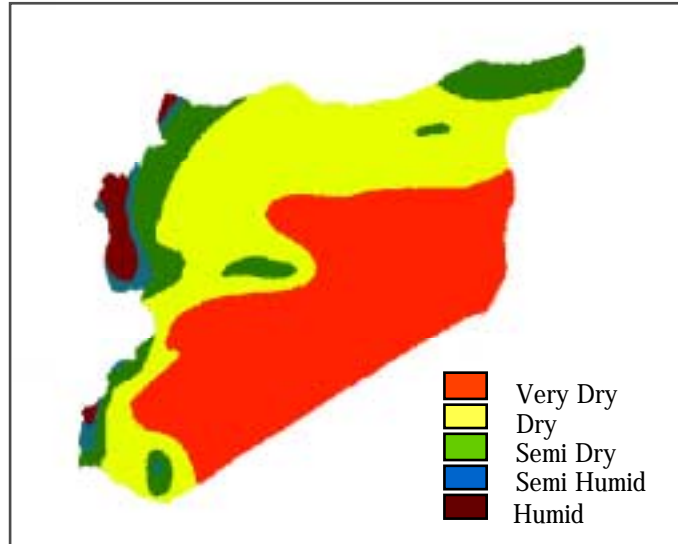# *AAINews*

Maize in Syria

During summer in Damascus, you can find a lot of stands selling cactus seeds, pistachio nuts, maize, etc. And what attracts me most among them is the smell of boiled maize. People seem to enjoy maize boiled in a huge pot.   However, those boiled maize are taste-less and hard to chew, just like chewing gum. (It will definitely help you develop your jaw muscles!)   And their grains are small and whitish, compared with Japanese corn.

Encouraged by the request from a Japanese women group in Damascus, we sowed seeds of Japanese honey corn in our small rental farm at the end of May.   They grew big enough by mid-July and we harvested them with Japanese children and JOCV (Japanese Overseas Cooperation Volunteers) members. The harvests were distributed to other Japanese and also to the owner of our farm. He seemed very surprised and said,   "I have never eaten sweet maize like this."

Very Dry
Dry
Semi Dry
Semi Humid
Humid

Bio-Climatic Regions of Syria

Although the Japanese maize did not grow tall due to the climate difference, everybody enjoyed our organic farmed, no pesticide used sweet maize.   We are planning to do it again this year to see everybody (especially children) feeling happy.

(Reported by Onuma in Damascus)

Stands of boiled maize in Damascus

Part 3: How to plant trees in large scale afforestation

Seedling production

Seedlings are produced in nursery stations of the Forestry Department. The cultivation media is a mixture of sand and compost (6:1). Seedling production starts in November or December, before winter comes. Seeds are sown either in black plastic pots filled with soil or directly in nursing field. In the latter case, seedlings in nursing field will be transplanted into black plastic bags when they grow big enough. These seedlings are put in nursing fields without shading. Seeds of indigenous species need scarification before sowing, in order to break their dormancy and to increase rate of germination.

Type of planting

In large scale afforestation, 40-50 ha of land is regarded as one unit and enclosed with fence in order to protect trees from browsing by camels, sheep and goats. Density of trees are standardized at 7 x 7m lattice. It is said that if the intervals are shorter than 7m, many trees have to be thinned out as they grow up, which means water consumed by those thinned out trees are wasted. However, when planted at 7m intervals, it takes long time before trees grow enough as wind and/or sand protection forests. To shorten the time, another method has been tried recently, which plants trees at 3.5 x 3.5m lattice outside main afforestation area.

How to plant trees

The size of a hole for planting a tree is specified as 1 x 1 x 1m. After putting NPK complex fertilizers and composts (animal manure) in the hole, a 1-2 years old, 50-60 cm tall seedling is planted in it. After filling back the hole, the planted trees are enclosed with tree guards. Planting, fertilizing and maintenance are handled by local workers. Two kinds of fertilizers (Urea and mixed fertilizer) are put for 3 months during winter.

How to irrigate

Planted trees are irrigated by drip irrigation using underground water. Water is pumped up and sent through underground pipes to the terminals set on the ground. Amount of water for one tree is about 40 liter a day. From the second year onward, trees are irrigated once 2 or 3 days considering effect of leaching accumulated salt in the soil to downward. Quality of irrigation water is generally bad. It usually contains 4,000-10,000 ppm, occasionally more than 15,000 ppm of salt. The salt accumulates and crystallizes at the foot of trees, and when

the rain falls, seldom if ever, the accumulated salt dissolves and damages the planted trees. To avoid this problem, salt crusts are removed when needed. Bu Harma Forest, planted in 1984. Main tree species are Acacia arabica, Acacia modesta, Prosopis cineraria, Zizyphus jujuba and Melia azadirachta. Tall trees and shrubs are planted all together at 2.5-3 m intervals. Initial purpose of this forest was commercial cutting, but no cutting has been done so far. Compared with other forests, color of the soil is darker, probably because more fallen leaves are accumulated due to high density afforestation. Quality of irrigation water is good, 0.7mS/cm (approximately 500ppm).
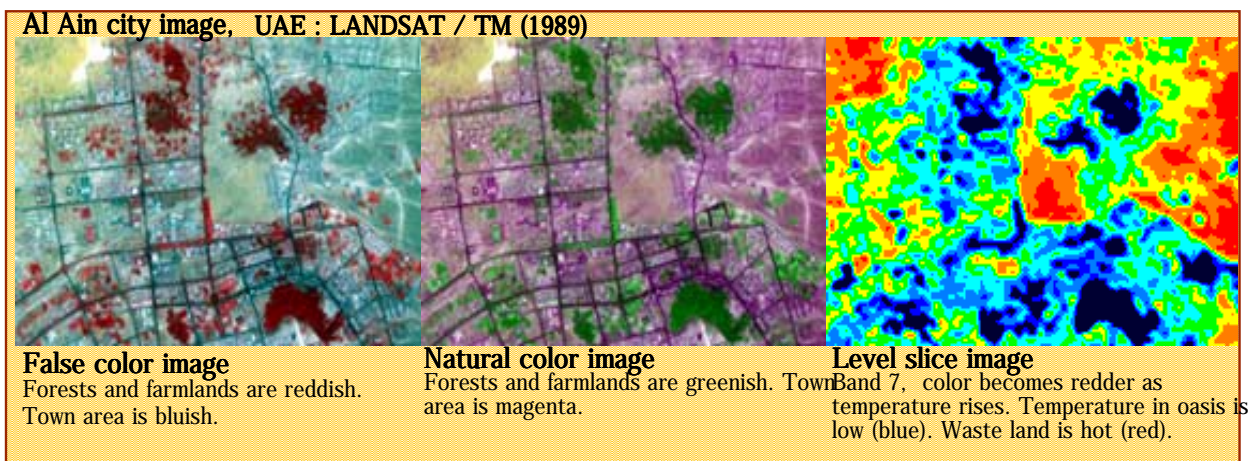
Part 3: Image processing techniques commonly used for analysis

The satellite image contains not only visual data (natural image) but also arranged numerical data. We can utilize the numerical data to process an image according to the purpose. It is called Image Processing. There are three kinds of image processing as follows; Retouching Processing which takes away distortion caused by atmospherical condition or position of a satellite, Conversion Processing which makes it easy to visually recognize the contents of an image, and Classification Processing which classifies objectives in an image according to purpose.

> False color image :
>   near infrared + red + green (R+G+B)
> Natural color image :
>   near infrared + red + green (G+R+B)
> Pseudo color image :
>   Shade of a color is assigned according to the rank of objectives.

(1) Output of image

You can make an image by assigning colors to the information of each band from satellite data. False color image, natural color image and pseudo color image are commonly used.

Al Ain city image,　UAE : LANDSAT / TM (1989)

False color image
Forests and farmlands are reddish. Town area is bluish.

Natural color image
Forests and farmlands are greenish. Town area is magenta.

Level slice image
Band 7, color becomes redder as temperature rises. Temperature in oasis is low (blue). Waste land is hot (red).

(2) Bi-Band Analysis

NDVI (Normalized Difference Vegetation Index) is a kind of Bi-Band analysis which is used to identify the area where vegetation shows strong vitality. In the case of TM(thematic mapper), NDVI is calculated by Band 3 and Band 4, which formula is

NDVI=(Band4-Band3)/(Band4+Band3).
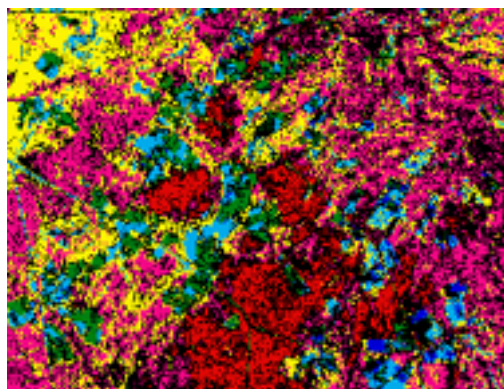
- 🟩 farmland
- 🟨 pasture
- 🟦 fallow land
- 🟪 thin wood
- 🟥 forest area
- ⬛ no classification

Land Use Classification (SPOT Image)

(3) Maximum Likelihood Method

Maximum likelihood method is the most popular method which sorts a pixel in accordance with maximum likelihood of classified sample data (ground data at the spot) under the assumption that the classified sample data shows normal distribution.

Plants in Arid Lands and Their Utilization (3)

PART 3 : Alluvial Fan

An alluvial fan can be classified into three parts, the top, the center, and the end. Most area of the top and the center parts of the alluvial fan around Al Ain is located in Oman territory and the end part spreads into UAE. The surface layer of the alluvial fan is composed of gravel and its size becomes larger at mountain side. The depth of gravel layer of the center part is several meters and the quality of ground water in this area is good. All the water sources for Faraj (Qanat) around Al Ain are distributed in this central part. The size of soil particles at the end of the alluvial fan is relatively fine and the area is often covered with sand dunes. Vegetation at the top is similar to that of mountain area.　Rhazya stricta, and Acacia tortilis grow at the center. Hammada elegans and Prosopis cineraria predominate over the end.

1) Rhazya stricta

Characteristics:

Distributed over north-west India, Iran, and Arabian peninsula. The size of a leaf is 2-3 cm wide, 5-10 cm long. The flowers bloom from February through June.

Conditions of growth:

Highly drought tolerant. Growing in gravel plain. Weak against salinity and germination rate declines when soil salinity exceeds 2,500 ppm.

Use: Traditional medicine for indigestion, stomach ache, etc.

2) Prosopis cineraria

Characteristics:

Distributed over arid lands in India, Pakistan and Arabian peninsula. Compound leaf. Thorny. The root goes　　straight and deep into the ground.

Conditions of growth:

Highly drought tolerant. Growing with less than 100 mm/year of rainfall. It endures wide range of temperature, from -6　　to 50　and prefers　alluvial soil or sandy soil. It can grow with alkaline soil as well.

Use: Used as firewood because it generates high calorie heat (5,000kcal/kg). Young shoots are good feed. Also used for furnitures, timbers and frames of boats.

Others: Adopted for afforestation for fixing soil.