

## Facts about dry land vegetation <Part 1>

From volume 1 to 7 of the AAINews, we introduced representative geography and main natural vegetation in the Al Ain Region in the United Arab Emirates (UAE) with the theme “Plants in Arid Land and Their Utilization.” Since then, we have encountered a variety of interesting plant species in arid areas ranging from west Asia to Africa but with particular emphasis on species in the Arabian Peninsula. Many plants in the arid region possess distinct characteristics due to their adaptation to the harsh environment. Some have a high concentration of special ingredients. In this series, we would like to introduce plants that are particularly interesting.

In this first part of the series, we focus on mesquite (*Prosopis juliflora*). The plant is originally from America and its current range extends from Asia to Africa. As introduced in the previous series from AAINews Volume 1, in the UAE, mesquite has been widely used as a preferred species for afforestation in saline soil, for fixing sand dunes and for general wind break applications. Also, as discussed in the AAINews volume 59, it has been used as a wind break strategy in Mauritania in West Africa. Furthermore, in the afforestation activities in Mali, Africa, organized by the Association SAHEL, mesquite has been used as an important tree species. The FAO has been promoting mesquite planting to combat desertification and as an integral part of agricultural development. In many regions, mesquite shows faster growth compared with local tree species. In the UAE, a growth rate of 40-50 cm per month in mesquite branches was observed in a good season. Mesquite is an effective dune fixer because of the tree's shape which has a canopy that covers the ground surface. It is also useful as livestock fodder. In particular, seeds are considered to be a nutritious supplement for camels and other animals. Furthermore, it is a useful material for building and fire wood, providing precious cash revenue for local people. In Sahel, the branches and leaves are used as protective fencing for farming fields.

However, mesquite is an invasive species and can spread very easily beyond necessity as the tree can easily germinate and spread its territory using surface water runoff or by using livestock feces as a medium of transport. In fact in Sudan and Somalia, invasive mesquite in farming or range lands has been causing undesirable impacts for crop production and livestock movements, resulting in a reduction of agricultural revenue. In addition, mesquite overgrown in canals for irrigation is making removal of silt difficult, having negative impacts on irrigation farming and inland fisheries. Furthermore, as mesquite trees have long roots, they lower underground water tables, leading to reduction of potable water for human consumption. Livestock is reported to have died of indigestion after eating mesquite seeds. There are also reports of an increase in malaria cases. Furthermore, mesquite's invasion impacts on local flora and pasture resources are leading to a loss of biodiversity. When we visited Oman recently, we met government officials who are troubled by invasive mesquites in natural rangeland.

As described above, mesquite has both positive and negative effects like a medicine. In areas with severe desertification threats, people tend to think mesquite should be conserved. However, in many areas, appropriate management of mesquite is called for. In countries such as Sudan, large scale control and stump pulling is carried out using machinery. However, such operations require a large amount of cost and labor, and as a result operations often get half done and local people suffer from “reinvansion.” One counter measure is to conduct early and frequent removal when plants are small as a preventative measure. In the future, it is necessary to establish an appropriate management and monitoring system regarding mesquites' distribution and invasion. Simultaneously, it is necessary to conduct broad environmental education and awareness raising activities targeting local community.



Mesquite ground cover stopping the sand dune shifts



Dry branches that are used for protection fence



Branches with many pods