

## Dew Pit Experiment at UAE University

Dew pits are generally considered to have originated in the ancient city of Jericho (in about 4,000 BC), and the oldest pit that has been found is in the Nabataean ruins. This technology was used to collect evening dew in a water scarce environment. At the Hebrew University in Israel, an experiment is being conducted to revive the ancient dew pit techniques to collect water for irrigation purposes. Also, the survival manual of the U.S. Army includes a dew pit technique as a means of securing water in desert conditions. When I was a student, I wondered whether the dew collecting technique could be used for afforestation in arid regions. Finally, I have been able to conduct an experiment. (By Shoji)

The first prototype was “open style”. I dug a pit of 80 cm in diameter and 30 cm in depth, and reinforced the pit with bricks so that it would not collapse. Then a funnel-shaped polyethylene sheet was placed over the pit. I named this device “a dew pit” and measured the amount of condensation resulting from different quantities of water put into the pit. The result was that between 170cc and 1,200 cc of condensation per day was collected with one liter of water inside the one square meter of pit. The electrical conductivity (EC) was less than 0.1 mS/cm. However it is important to bear in mind that water in the pit is likely to contain high concentrations of salt. White salt accumulated on some parts of the ground surface inside this dew pit. This has become a major flaw that needs to be resolved in this method, and a new design was tried.



**Dew pit (open type)**

The new design is a closed dew pit that uses a plastic basin and an aluminium pan. Because the plastic basin can store under ground water with high salinity, the salt accumulation on the ground can be avoided. Condensation collected per day amounted to between 700 and 1,500 cc per 1 m<sup>2</sup> of dew pit. The photograph on the right is of *Acacia raddiana* which is being grown with water collected in a dew pit. Experiments on the same type of dew pit have been conducted by researchers in Papua New Guinea and Nigeria. I think that dew pits are not only useful for irrigation purposes but also useful from the view point of “access to safe water”, something that is often advocated by the U.N. What do you think?



**Dew pit (closed type)**

Presently, the UAE University has a total of 9 dew pit devices made of galvanized metal plates, each 1 meter in diameter. This design takes into account the need for straightforward construction design in developing nations. Three devices are placed in Sweihan in the barren land of Sabkha, taking advantage of the local conditions such as the high underground water table (50 cm) and the sterility of the land. Another three dew devices are in a place called Dabaiya, also in Sabkha, and the remaining three are set up at the University. It is planned that the daily amount of condensation will be measured and experiments and demonstrations will be carried out regarding the technology’s application to the fields of irrigation and drinking water.