

# Irrigation in the Middle East

The harsh environment in the Middle East has been tamed by applying established and proven principles of irrigation, with particular emphasis on salinity, common sense and water economy. The environment is, however, very unforgiving of the inexperienced.

Unfortunately, there has been a multitude of otherwise learned and rational professionals who see in the mostly unstructured atmosphere of the Middle East, a chance to try their hand at something new.

The prime offenders are often electro-mechanical engineers, who assume that irrigation is just a cheap form of fire protection. This is typified by a golf course which stood on the outskirts of a major Arabian city. The extensive turf areas were a regular pattern of circular patches which did not touch. The clubhouse and sports complex were slowly crumbling under the daily bombardment of high sulphate water, since no one uses half circle sprays for fire protection. Perhaps the only similarity between a fire protection and an irrigation system is that by the time a design error is discovered it is usually too late.

The civil engineer, on the other hand, belonging to a more conservative discipline, naturally plays things very safe. Pipeline flows will seldom exceed one foot per second, standard valve chambers could easily double as nuclear shelters, and of course epoxy coatings are specified for everything, from the brass control valves to the PVC pipe. Sadly, there is seldom any money left for the actual delivery system.

There are also some original thinkers amongst horticulturists. Their starting point is often the premise that a sandy soil is bad, as clay or preferably a silt base is absolutely essential, especially if it is supplemented by massive amounts of peat! The reason is that they do not want the nutrients to be leached out of a sandy soil. Even the experts seem to forget that it does not really rain much in the Middle East, and that leaching in an area with high evaporation is actually quite a good thing.

At an important protective planting scheme next to a fairly large driving range the horticulturist replaced, at great expense, the admittedly unfertile but free draining sweet

sand, with 1 cu m per tree of equally unfertile clay and peat. The greenkeeper proceeded to apply four or five times the plants requirement of slightly saline water, which puddled around the tree base and evaporated leaving behind a neat ring of salt chunks.

Common sense should always be in the mind of a design engineer's mind. Especially, when he is preparing operational and maintenance manuals. For instance, screen filters are normally quite adequate for the filtration of what is locally accepted as tertiary treated sewage effluent for drip irrigation.

Occasionally, in the height of summer, problems develop in the treatment plant, and the loading on the filters is so great that they have to be cleaned manually. Until the day that the maintenance foreman discovered that he would not have to clean the screens anymore if he removed the filter sock completely. It took quite a few months to repair the damage caused by that innovation.

In an area full of experts from all over the world, to become a specialist in irrigation it is necessary to remember two laws of physics. Firstly, that water flows downhill and secondly, that the amount of water that goes into a pipe can never exceed the amount that comes out.

*Peter Harradine is the principal of Harradine Golf, and has designed many golf courses in the Middle East and around the world*

