

Drainage waters reuse feasibility study in Ouargla basin

In Ouargla basin, the irrational exploitation of water and use of an irrigation system based on submersion methods result in huge influent seepages reaching down over the underlying beds. In addition, sewage discharges, in an anarchic way and without treatment, greatly contribute to contamination and additional supply of groundwater.

In this work, we have checked the palm grove borders. A characterization of soils and drainage water was thus done, and solutions to this problem are being proposed.

Soils of palm groves have a loamy sandy texture. They are usually permeable and slightly alkaline with a very variable salinity. As for sand dunes and coarse sands, these are alkaline soils with a low salinity and consist primarily of quartz.

Drainage water salinity varies in time and space, with considerable differences. The palm grove's actual consumption is much below the necessary requirements. A drainage diagram was proposed and consists in performing a reshaping of the old drains and directing their discharges to the main drain. Thus, ensuring these conditions, we will have a significant flow that will cause a considerable rise in the groundwater. To remedy the resulting rise, a study of treatment and purification of these waters was performed for the reuse thereof.

The purification technique proposed goes by the use of old techniques, it is about the use of an anaerobic phase (septic tank) and an aerobic phase (filtration on local dunes sand). Dune sand has very favorable characteristics for its use as a filter. However, the experimental study will justify the selection of this technique. For this, we have achieved a prototype and have measured the following parameters: BOD₅, COD, EC and pH.

A second treatment technique consists in desalinating the drainage water. For this, we have gauged a reverse osmosis treatment plant.