The experimental study of the behavior of the shallow aquifer under irrigation was conducted in two rice fields. The experimental set-up consists of:

- pressure probes to monitor the surface water level in flooded rice plot,
- TDR probes for measuring soil moisture,
- measuring probes of the groundwater level and the EC of the groundwater,
- network of piezometers for monitoring the water table,
- Suction cup for monitoring the soil solution.

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OBJECTIVES:

1. Establish the water and salt balance in the aquifer,
2. Characterize the dynamic of water and salt under irrigated plots,
3. Identify the role of irrigation in the risk of salinization,
4. Control the risk of soil salination;
5. Propose a model of rational management of the resource.

This experimental study constitutes a reduction of scale to better understand the interactions between irrigation / groundwater dynamics / soil degradation. It has made it possible to demonstrate that the waterlogging phenomena of soil saturation and upwelling are accompanied by chemical changes that can lead to capillary rise phenomena under the effect of evaporation.

These results were subsequently used for the development of a numerical flow and transport model in the variably saturated zone with the Hydrus 2D code.

Conclusions and perspectives

This experimental study constitutes a reduction of scale to better understand the interactions between irrigation / groundwater dynamics / soil degradation. It has made it possible to demonstrate that the waterlogging phenomena of soil saturation and upwelling are accompanied by chemical changes that can lead to capillary rise phenomena under the effect of evaporation.

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