



Lysimeter Kleče Sanitation

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Ljubljana field aquifer is the main source of drinking water for Ljubljana. About 35% of the recharge area is used for agriculture, predominantly for intensive vegetable production therefore two lysimeters were built in 1991 at the area of the water pumping station Kleče in order to study natural nitrate percolation through the unsaturated zone. The lysimeters consist of two concrete pipes (radius: 0,9 m, depth: 2,0 m), filled with autochthon soil, sandy (pebbles of 2-4 cm diameter) gravel and drainage material, each 50 cm thick. Both lysimeters are connected with control shaft. The mean porosity of the lysimeter is 22 %. At the bottom of the lysimeter outflow a drain pipe leads into adjacent control shaft where outflow is measured with tipping bucket. The measurements of percolating water indicated that the southern lysimeter is damaged, because the part of the percolating water is lost through the bottom of the container. This was the reason for the removal of the southern lysimeter and replacing it with hydro-lysimeter. The monolith of 2 m height and 1,1m diameter will be cut from sandy gravel sediments on the area of the water pumping station. Inside the monolith tensiometers, TDR probes and suction cups will be installed in three levels in depths of 50 cm, 100 cm and 150 cm. Additionally 2 tensiometers for temperature and tension in the depths 190 cm to transfer field matrix potential into the lysimeter will be installed.

Long term observations of water balance and nitrate percolation are very important in order to assess trends in groundwater recharge and nitrate content. Measurements and monitoring of NO₃-N in percolated water from non-fertilised area give information about nitrate natural background, which helps to determine the correct use of plant fertilizers and enables prompt reactions to negative trends on the groundwater quality.