

Abstract

The water supply system Káraný (WSSK), which is using the water from Quaternary fluvial aquifer and induced recharge from Jizera River, is affected by increase of nitrate content in recent years. No tension lysimeters were emplaced into the soil at locality north of Sojovice and sampled roughly with monthly frequency. Samples were analyzed on isotopic content ($\delta^2\text{H}$ and $\delta^{18}\text{O}$ of H_2O) and chemistry. Volume of water collected in lysimeters was recalculated to mm/year. Infiltration tests demonstrated that infiltration rate at surface of agricultural land is low and therefore Horton surface flow is generated after heavy rains and during watering periods. Horton surface flow is disappearing into open desiccation cracks. This concentrated recharge may via preferential pathways transport nitrates via unsaturated zone. Using selected environmental tracers (Ca^{2+} a SO_4^{2-}) the portion of water from Jizera River in individual wells of WSSK was calculated. For Sojovice part of WSSK the water from Jizera River accounts for 71 - 80% of pumped groundwater and for Skorkov part of WSSK this is only 38 – 41%. The remaining part of water is either water from infiltration to Quaternary fluvial aquifer and/or water from Cretaceous Jizera Formation Aquifer. It is not possible to distinguish these two sources by means of chemical composition of groundwater. These waters are main source of nitrates in WSSK.