

THE EFFECT OF AGRICULTURAL ACTIVITY ON WATER QUALITY OF A DOLOMITIC AQUIFER NEAR VESZPREM, HUNGARY

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The reason for research in Veszprem area (Transdanubian Mountains, Hungary) was the high (30-40 mg/l) nitrate concentration in spring water. Budaors Dolomite Formation is the main aquifer in the area and is bordered by lower and middle-Triassic sediments (SE) and the upper-Triassic Veszprém Marl Formation (NW). Springs appear along traverse faults on the borders of the aquifer. The nitrate concentration of the groundwater, sampled from the springs and the observation wells located both near and far from the local pollutant sources, is high (30-40 mg/l). The whole aquifer is characterized by diffuse contamination. The main pollutant is the nitrogen coming from artificial fertilizers (100-150 kg/ha/y) and precipitation (28 kg/ha/y). There is not enough natural vegetation to absorb nitrogen on the thin and poor soils of the area. The nitrogen accumulated in soils infiltrates into the karst water at high precipitation events. Results of groundwater modeling of the area show that groundwater flow tends to NE and has a velocity of 0.8-1.8 m/d. The recharge area of Kadarta springs is the same as the extent of Budaörs Dolomite Formation. The contaminant transport simulations show that by stopping the use of fertilizers, it would take more than 30 years to decrease the nitrate concentration observed in spring water to 15-20 mg/l. The nitrate concentration of the neighboring areas having similar geological setting but covered by natural vegetation is about 15-20 mg/l. This fact reflects on the importance of protection of natural vegetation of vulnerable dolomitic karsts.