

*Nitrate pollution in receiving waters has become a serious issue worldwide. In Algeria, underground water pollution by nitrates has become alarming. Globally, denitrification is commonly employed in biological nitrogen removal processes to enhance water quality. This research investigated the valorization of a vegetable residue (sawdust) as carbon source and biofilm carrier for denitrification in batch reactor to remove nitrate from synthetic groundwater. Throughout the study, the effects of some important parameters including initial nitrate concentration (50-130 mg/L), amount of carbon source (2-8 g/L) and initial pH (4-11) were studied. The results showed that the system achieved high denitrification; nitrate removal was greater than 99 % after 3 hours of incubation. The nitrite concentration ( $\text{NO}_2^-$ ) in the effluent was below 0.030 mg/L. The results also showed an important effect of C/N ratio on the performance of the process.*