

## The assessment of using zeolite and perlite to removal total forms of nitration from industrial wastewater

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**INTRODUCTION:** The wastewater is potentially useless before special treatment and management before using as irrigation water (Erdem et al., 2004). In additional, commercial application of zeolite and perlite is due to three important factors: structure (high CEC and pores<sup>0</sup>, availability and economic cost) (Mumpton, 1999). Irrigation methods like pitcher irrigation system are more efficient by using absorbent mineral materials. The main abject of this research was assessment of total forms of nitration such as  $\text{NH}_4^+$  and  $\text{NO}_3^-$  from untreated industrial wastewater of Zob-Ahan Isfahan, Iran.

**MATERIALS AND METHODS:** This research was carried in khoradgan's farm under Olive cultured with arid and very hot, arid soil order and heavy texture. An experiment plan with 2 treatments (Clay pot included Natural Zeolite and Perlite with half of volume of total) and two soil treatments (soil sampling from 0-30 cm around the clay pot) in 4 replications that irrigated by Zob-Ahan wastewater in 12 events (1.5 Liter per each irrigation event). All chemical and physical analyses were done at beginning and end of experiment by APHA (1995).

**RESULTS AND DISCUSSION:** Whereas the total-N,  $\text{N-NO}_3^-$  and  $\text{N-NH}_4^+$  did not adsorb by soil (concentration reduced about 50%, 66% and 83%) because of saturation by other exchangeable cations and anions, the absorbent mineral materials especially zeolite removed them more than perlite. The concentration of adsorbed  $\text{N-NO}_3^-$  by zeolite and perlite increased about 4.5 and 2.4 times, respectively. The concentration of adsorbed  $\text{N-NH}_4^+$  increased about 28.81 and 91.73 units by zeolite and perlite. Overall, zeolite is more effective to remove N forms.

**Keywords:** Industrial wastewater, Nitration and zeolite

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