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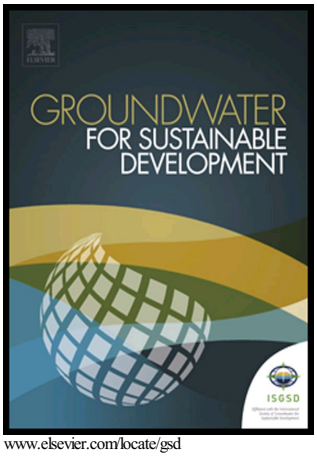

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Groundwater use and efficiency in small- and medium- sized aquaculture farms in Ararat Valley, Armenia

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Abstract

Due to high quality, pure potable artesian groundwater is the main source of water supply for the fisheries in Ararat Valley, Armenia. As a result of increased groundwater abstraction for fish farming, the long-term viability of groundwater aquifers as well as groundwater use by other sectors in the Ararat Valley is challenged. In a response to observed deterioration of water availability in Ararat Valley, starting in 2013, new policies and relatively strict regulations on water use were put in place and intensive fish production systems are being promoted.

The current study aims to analyse the water footprint of small and medium scale groundwater based aquaculture farms, the largest and most sensitive to changes proportion of farming operations, in Ararat Valley and to determine their role in groundwater sustainability in the region.

Our results demonstrate that the promotion and successful implementation of more intensive low cost fish farming systems can address the gross underutilization of valuable groundwater resources and lead to a significant improvement of water resource efficiency in Ararat Valley fisheries. An additional benefit will be a decrease in environmental degradation due to the management of nutrient rich aquaculture discharges into receiving water bodies, and soil waterlogging in the area.

Highlights

- Due to high quality, pure potable artesian groundwater is the main source of water supply for the fisheries in Ararat Valley, Armenia.
- As a result of increased groundwater abstraction for fish farming, the long-term viability of groundwater aquifers as well as groundwater use by other sectors in the Ararat Valley is challenged.
- The current study demonstrates underutilization of pure potable groundwater resources in Ararat Valley fish farms.