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# Assessment of arsenic status and distribution in Usangu agro-ecosystem-Tanzania

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## Abstract

This study was conducted to assess arsenic (As) status and distribution in Usangu agroecosystem-Tanzania, including three land use. About 198 soil samples were collected in ten irrigation schemes in three land uses. Total and bioavailable As were determined by acid digestion (Aqua regia (AQ)) and Mehlich 3 method (M3) to estimate status, distribution and bioavailability. Arsenic concentration were variable among land use and irrigation schemes where total arsenic ranged 567.74–2909.84  $\mu\text{g}/\text{kg}$  and bioavailable As ranged 26.17–712.37  $\mu\text{g}/\text{kg}$ . About 12–16% of total arsenic were available for plant uptake. Approximately 86.53% of studied agricultural soils had total As concentration above Tanzania maximum allowable limit. Bioavailable As were lower compared to total As and were within the acceptable threshold. Total arsenic concentration were variable among schemes and higher values were observed in schemes which are highly intensified and mechanized. Thus, this study provides essential site specific preliminary baseline information for As status and distribution in agricultural soils to initiate monitoring and management strategies for increased land productivity and environmental safety.

## Keywords

Arsenic; Health risk; Paddy farming; Pollution risk; Usangu basin; Irrigation scheme