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AT THE FARM LEVEL, REDUCING AGRICULTURAL WATER FOOTPRINTS

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ABSTRACT

Beijing is one of the world's most water-stressed cities. Reducing agricultural water consumption has long been the cornerstone of municipal water strategy. The potential to decrease the life cycle (cradle to gate) water footprints of wheat and maize, which account for 94 percent of local grain output, was evaluated in this paper. The wheat-maize rotation system's consumptive and derivative water consumption was modeled using ISO 14046 under various irrigation and nitrogen (N) application choices. Although there was no significant production reduction when irrigation water volume was reduced by 33.3 percent compared to current practice, the water scarcity footprint and the water eutrophication footprint were reduced by 27.5 percent and 23.9 percent, respectively. Similarly, decreasing the nitrogen application rate by 33.3 percent from present practice did not result in a substantial yield decrease, but it did result in a 52.3 percent reduction in water eutrophication while keeping a comparable water scarcity footprint. These findings show that better water and fertilizer management has a lot of promise for lowering crop water footprints at the farm level. This scenario in Beijing is likely to be indicative of the difficulty that many of China's water-stressed areas face in finding a long-term agricultural solution.

KEYWORDS: *Crop Production; Life Cycle Assessment; Water Scarcity Footprint; Water Eutrophication Footprint; Sustainable Water Use.*

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