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The role of Kampar watershed in achieving sufficient rice production and sustaining agriculture
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Abstract

Agriculture is the largest global water consumer, crucial to understanding its impact on watersheds. This study was conducted in the Kampar watershed in Riau province, covering Kampar and Pelalawan regencies. It assesses the watershed's suitability for meeting agricultural water needs, particularly for rice cultivation. The study utilizes quantitative methods, applying the Penman–Monteith technique and benefit transfer analysis to measure the water footprint of agriculture. Key indicators include blue, green, and gray water footprints. The water footprint in the Kampar watershed is 173.84 m³/t, with rice cultivation in the Kampar regency having 57.96 m³/t blue, 32.19 m³/t green, and 14.52 m³/t gray water footprints. In the Pelalawan regency, the values were 41.09 m³/t blue, 25.59 m³/t green, and 2.49 m³/t gray water footprints. The findings suggest a significant need for ample water usage from surface and groundwater in both Kampar and Pelalawan regencies for rice cultivation. Regarding the water availability in each district: Kampar regency has 1,063,281,652 m³/year and Pelalawan regency has 987,542,991 m³/year. This surplus in the Kampar watershed ensures sufficient water for rice cultivation in both districts, especially in the Kampar regency. These hold promising further agricultural development in the Riau province. © 2024 IWA Publishing. All rights reserved.

Author Keywords

gray water; Riau province; rice farming; water footprint; water usage

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Cultivation, Farms, Groundwater; Agricultural water, Gray water, Quantitative method, Riau province, Rice cultivation, Rice farming, Rice production, Water footprint, Water needs, Water usage; Watersheds; ground water, surface water, water; agricultural development, cultivation, rice, water availability, water footprint, water use, watershed; Article, comparative study, controlled study, crop production, fluid balance, nonhuman, quantitative analysis, rice, sustainable agriculture, water availability, water footprint, watershed; Indonesia, Kampar, Malaysia, Pelalawan, Perak, Riau, West Malaysia

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