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ASSESSMENT OF AVAILABLE LAND RESOURCE FOR SURFACE IRRIGATION DEVELOPMENT FOR EYANDA RIVER BASIN, GIDOLE SOUTHERN ETHIOPIA

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ABSTRACT

Land and water resources assessment for irrigation wasimportant for decision makers and planner for sustainable natural resources. This research was to assess availability of irrigation inEyanda river watershed. Based on multi criteria evaluation method on suitable land for surface irrigation was evaluated based on soil physical properties, land cover type and slope. Watershed delineation was first completed, then suitable parameter for evaluating surface irrigation potential was characterized finally water potential assessment was done. After that each parameters for suitability assessment was reclassified and mapped according to suitability classification for determination irrigation development to reduce poverty. Then all parameters are overlaid and show that 71.4 % of the total lands were found between highly to slightly suitable for agriculture, whereas 28.6 % was unsuitable class due to slope, type of land cover in and soil physical properties soil suitability inEyanda watershed. The performance efficiency indicators were evaluated and the result was 0.84 for R^2, RVE which was -8 and NSE was 0.5 for calibration and R2 was 0.76, NSE value was 0.87 and RVE value was -9 % for model validation of stream flow analysis and it shows that the parameter falls within the acceptable range. Crop water requirement was evaluated for sorghum, maize and pepper and Available water was calculated at 85 % consistent discharge abstracted from the ArcSWAT. The outcome designates that designates that water available in river was more than amount of water needed by crop.

KEYWORDS: *Irrigation Potential, Water Management, Watershed, Suitability Factors, Arcgis, Arcswat2012, Land Resource, Water Availability*

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