

GIS Based Irrigation Suitability Analysis - A Case Study of Abaya-Chamo basin, Southern Rift Valley of Ethiopia -

- Poster -

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Existing data on topography, climate, soil, land use pattern, water availability, agricultural practices, investment costs and socioeconomic practices are investigated and the irrigation suitability criteria defined based on these variables. Digital Elevation Models (DEMs) are developed to investigate the terrain features of the basin from the digitized contour map of the basin and variation in elevation as well as slope is evaluated.

Stream net work characterisation and the mapping of soil and land use units using a GIS environment and defining their suitability for irrigation as well as crop development with respect to the prevailing conditions was carried out. Super-imposing all attributes in the GIS environment and identifying potentially suitable areas for crop development, suggesting appropriate methods of irrigation, compiling a geo-referenced suitability database (slope, soil, land use, water) for irrigation are among the main treatments undertaken during the study.

As observed from the DEMs, a large portion of Gelana and the lower delta of Hare, Kulfo and Bilate Rivers in Southern Ethiopia are characterised by suitable soil units characterized by good inherent fertility and high moisture holding capacity with flat land slope (below 10 %) and are thus suitable for surface irrigation. The capacity of different percentage exceedance low flow and the area that can be irrigated with respect to these flows is estimated for respective sub basins.