Development GIS/ Remote Senisng Based Methodology for Identifying Suitable Runoff Harvesting Sites in Semi-arid Loess (Case study in Shurdare watershed Golestan province)

Abctract:

Countries With Water scarce such as Iran are subject to various hydrological constraints which can often be attributed to poor rainfall partitioning, particularly within resource poor farming communities that are reliant on rainfed agriculture. Recent initiatives to address this have shifted focus to explore more efficient alternatives to water supply and the recognition of numerous opportunities to implement runoff harvesting as a means to supplement water availability. The main purposes of this study are use of GIS ability and remote sensing data for identifying of potential runoff generating sites, and thus high priority areas for construction of earth dams systems and estimation of rainfall-runoff at Shurdareh watershed in the east of Glosetan province, Iran. GIS is useful tool for saving, analyzing and controlling of spatial information and when linked to remote sensing data provides this possibility to assumed more accurate decisions about hydrologic processes such as runoff. For this purpose at first potential runoff generating sites were specified by use of watershed features same as slope, land use and soil type. Based on GIS analysis it was found that 68.8% percent of the area has a high potential for generating surface runoff. For estimation of runoff depth, NRCS-CN method was used. Then suitable sites for construction of earth dams were produced with integrating potential runoff map and runoff depth. Results showed that only 7 earth dams from total of 18 earth dams are constructed in a suitable site (high potential for generating surface runoff). From obtained results, it is concluded that providing an accurate spatial representation of the runoff generation potential within a watershed is an important step in developing a strategic earth dams constructing plan for any area.

Keyword: GIS- Remote Senisng- Runoff Harvesting - Earth Dam- River Gorgan

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