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MODELLING THE RESPONSE TO HYDROLOGY OF SMALL MULTI-PURPOSE RESERVOIRS FOR IMPROVED RURAL LIVELIHOODS IN THE MZINGWANE CATCHMENT: LIMPOPO BASIN

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Abstract

It is a fact that the southern part of Zimbabwe lies in semi arid regions of the African continent. This region is characterized by low rainfall; people often have to live on a total of less than 600mm of rainfall per annum, which is not only low but also erratic. Rainfall is also poorly distributed and falls predominately during a few months, from October to March. The little runoff generated should be captured and harnessed for multi purpose uses during the dry months of the year. The provision and development of small multi-purpose reservoirs becomes inevitable. This study sort to confirm the marginalized hypothesis that small reservoirs can be better managed, given the right tools for planning and decision-making, hence improving on rural livelihoods. A windows based computer model (WEAP System) was validated, calibrated and then used to evaluate and simulate the various hydrological factors at play in the Mzingwane catchment of the Limpopo Basin. The scenarios simulated, would play part and contribute to the improvement of rural livelihoods, through better management of small multi-purpose reservoirs. The results of the study confirmed a high dependence of the community on small reservoirs, from small garden irrigation, livestock watering, domestic uses and fishing activities as well as brick making. Of course, these impact on improving rural livelihoods. An understanding of catchment hydrological parameters is paramount to obtaining useful results for planning, management and making recommendations to decision makers.

Attention now and in the future should be centred on optimising the planning, use, development and management of existing and future surface-water resources in the form of small reservoirs, rather than on further development of large storage reservoirs,, particularly if improvement of rural livelihoods is to be addressed

Keywords: livelihoods, small reservoirs, catchment hydrology, modelling