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Author: Ms. Esther Ibrahim

National Space Research and Development Agency (NSRDA), Abuja Nigeria, Nigeria,
esther.shupel@gmail.com

Dr. Bitrus Dang

National Space Research and Development Agency (NASRDA), Abuja Nigeria, Nigeria,
bitrusakila@yahoo.com

Mr. Jerome Iliya Joshua

NATIONAL CENTRE FOR REMOTE SENSING, JOS, NIGERIA, Nigeria, joshuailiya@live.com

Mr. Titus Dashan

NATIONAL CENTRE FOR REMOTE SENSING, JOS, NIGERIA, Nigeria, dashangmc88@gmail.com

GEOSPATIAL SURFACE WATER SUITABILITY ASSESSMENT FOR SMALL IRRIGATION
SCHEMES TOWARDS INCREASED LOCAL FOOD PRODUCTION IN NIGERIA: A CASE OF JOS
EAST LGA. PLATEAU STATE.**Abstract**

Irrigation is very critical for sustainable global food security, especially food production during off seasons in developing countries. The tropical climate in Nigeria limits the production of some exotic crops and vegetables. Although tropical highlands are used for such production, taking advantage of their conducive climate conditions, there are a few of these locations in Nigeria. Plateau state is one of such few locations in Nigeria, making it the major producer of Irish potatoes and other exotic vegetables. The state in recent years is extensively exploring irrigation agriculture to meet up this overwhelming demands. Local farmers rely on seasonal streams and abandoned mine ponds for irrigation, but these sources run dry before harvest leading to yield losses. This research explores methods to map, select and quantify suitable areas to site reservoirs for Small Holder Irrigation in Jos East LGA of Plateau state as a case study. Spatial Multi Criteria Analysis (SMCA) and other quantitative tools were employed for the modeling and subsequent spatial analysis. The results revealed that 11 sites are highly suitable for siting reservoirs in Jos East, although only 6 sites are optimally suitable following further analysis considering factors like potential reservoir sizes and depths. Volumetric analysis was carried out to estimate potential water collection capabilities of these reservoirs, and the water prospect is estimated between 172,660m³ to 13,929,275(m³), this was based on the calculated depth and surface area of the prospective reservoirs. Going forward, this model can be implemented in other parts of Plateau state, Nigeria and Africa with similar environmental, climatic conditions and water demands. We propose small reservoirs with simple engineering techniques to serve poor local communities in developing countries, this can alleviate poverty and enhance sustainable agricultural production. The initiative is in line with FAO's and World Bank's recommendations and programs, and can promote pragmatic solutions and project allocations.