Geo-Spatial Analysis of Micro-Farming Situation of Bhabanipur Village using Open Source GIS Software

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Abstract—*A Micro farming unit may be thought as a sub system of a relatively large farming situation, which is relatively homogeneous in nature and naturally possesses some distinguishable characteristics from the larger system or from another such sub-system. The agricultural planning and farm management can be made more effective and sustainable in long run by systematic analysis of the micro farming system. The spatial and temporal diversity of the natural resources, socioeconomic condition of farmers, market situation as well as other critical variables have significant role in farm decision making. The judicious analysis of these spatially variable driving forces is made possible by using Geographical Information System (GIS). GIS is a powerful tool that integrates geographic information and database management system. The present study was conducted with specific objectives for geo-spatial analysis of micro-farming situations as units for planning in agriculture. The area of investigation belongs to Bhabanipur village in Nadia district of West Bengal. In the present study the open source GIS software, Quantum GIS (QGIS) was used. In the present study the Bhabanipur village is selected and data on soil depth, water regime, cropping system etc were analysed using QGIS to study the agricultural potentiality of the target village. It was observed from geospatial analysis that agricultural land contributes the highest percentage (83.73 %) among total land use followed by house (7.84), plantation (6.65) and pond (1.78) respectively. The study revealed that that soil depth between 5 to 10 ft contributes the highest percentage (89.2%) of the total cropped area. The map developed by using GIS portrayed that high irrigation facility contributes the highest percentage (63.91%) followed by medium irrigation facility (20.86%) and low irrigation facility (15.22%) respectively. Similarly 85.98% of agriculture land has medium drainage facility. Land-use was classified according to crop sequence where it is observed that Plantation / Orchard crop sequence contributes the highest percentage (23.36%) and followed by sesame-vegetable-vegetable crop sequence (15.69%) and jute-vegetable-potato crop sequence (14.88%) respectively. Other crop sequence contributes very less percentage values to the land use pattern. It was observed that 300% cropping intensity contributes the highest percentage (82.45%). The spatial analysis may help the planners for judicious farm decision making by providing appropriate queries in the GIS system for identifying the target group and delineating area of intervention.*

Keywords: *GIS, Micro farming, Geo-spatial Analysis.*