

Research Paper :

Studies on water quality analysis

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Accepted : July, 2009

ABSTRACT

The research study was carried out at Malegaon watershed of Nasik district. The study was undertaken to develop action plan of Land Resource Development Plan (LRDP) map. The base maps such as watershed boundary, drainage network were prepared with the help of Survey of India (SOI) topographical map. The satellite data of IRS-1B (LISS-II) of 11th November 1993, 30th January 1994 and 8th May 1994 of the study area were used for generating land use/land cover map. The land use/land cover map indicates that 35.07% was *kharif* cultivated land and 4.32% was the double crop land. The land capability map was developed automatically in GIS using AML by assuming and standardizing the soil parameters. The prepared land capability map shows classes III, IV, VI and VII in the study area. The LRDP map was prepared by making the unique combination of land capability map with the land use map which suggests the intensive agriculture, double crop, horticulture, agro-horticulture and silvi-pasture.

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Key words : Land use map, Land capability map, Arc macro language

Over exploitation of watershed resources due to increase in population has resulted in their degradation. Both natural resources and socio-economic situation are integral parts of any watershed and should be given equal attention. Integrated management of natural resources on watershed basis is a rational and sound approach for sustainable development to realize national goals such as food security, poverty alleviation, and welfare of weaker section of the society.

With the launch of number of Indian and International remote sensing satellites, it has become easier and quicker to acquire high resolution image and data of any location in the globe and of a particular time. The remotely sensed data has the advantage of providing synoptic view and large area coverage, which impart knowledge about the condition on earth surface that change overtime.

Rao *et al.* (1997) undertook a study in Neelkanthpuram Watershed with the objective of generating action plans for sustainable development of land and water resources through the integration of information on soils, land use/land cover, slope and hydrogeomorphology using GIS approach. Pandit *et al.* (1999) carried out a case study of Nasik district (M.S.) using remote sensing and GIS based integrated watershed development. Sidhu *et al.* (1998) prepared various layers of maps like watershed and sub-watershed boundaries, hydrogeomorphology, soil, land use / land cover, slopes by interpretation of satellite data IRS-1B bands-2,3 and 4. Using the 'UNION' module all these maps were combined to generate action plan which shows that the

major area (53.8%) of the watershed is under afforestation. Murthy *et al.* (2000) planned village level action plans for land and water resources development, which required higher scales for planning. The action items for plan implementation were either area specific or local specific and to identify the end beneficiaries. Bhagavan and Raghu (2000) adopted Remote Sensing techniques for integrated watershed management IX-plan for watersheds proposed under National Watershed Development Project for Rainfed Areas (NWDPA).

METHODOLOGY

The information provided by the satellites in combination with other sources of information can be integrated through Geographic Information System (GIS) to quantify various parameters for efficient management of land and water resources in watershed.

Study area:

The study area covered the Malegaon watershed of Nasik Tehsil, which is located in the south-western part of Nasik district (Maharashtra) and lies between 72°28' to 73°37' E Longitude and 20°00' to 20°05' N Latitude. The watershed covers an area of 5022.97 ha. Physiographically, the area can be divided into alluvial plain, undulating upland, plateau plain, high plateaus, foot slope followed by the hill slopes. The general elevation ranges from 538 m to 1245 m above MSL. The general slope of the area is from north-west to south-west. The study area has sub-tropical, semi-arid monsoon climate