

Remote Sensing and GIS for Integrated Resource Management Policy-A Case Study in Medak Nala Watershed, Karnataka, India

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Abstract: Agriculture plays an important role in the economic development of Sedam taluk of Gulbarga district of Northern Karnataka. Nearly 80 per cent of the total area is arable and 76 per cent of the total population is engaged in different agricultural activities. Farmers are harvesting single crop in a year. Characterization and analysis of watershed were carried out using IRS 1D PAN + LISS III (merged data), LISS III data and Survey of India topomaps. Geo-referencing of the satellite data and preparation of different thematic layers like, land use/land cover, soil, hydro-geomorphology, drainage, slope etc. were carried out with the help of ERDAS IMAGINE and ArcGIS software. The results of the study revealed that there is ample scope for water harvesting structures and soil conservation practices in the watershed. The agricultural resource plan includes provision of alternate land use practices like agriculture, agro-horticulture, agro-forestry, afforestation, fodder and fuel and dryland horticulture. Information derived in terms of natural resources and their spatial distribution was then integrated with socio-economic data to develop resources action plans. Such plans are very much useful for efficient and sustainable management of natural resources.

Key words: Remote Sensing • GIS • Land use/ land cover • Soil • Water resources • Resource Management
• Medak Nala watershed • Karnataka • India

INTRODUCTION

Over exploitation and mismanagement of natural resources have resulted in adverse effects such as land degradation, biomass deterioration and siltation of tanks etc. Increasing food needs of growing population demands the efficient use of natural resources in a comprehensive manner. In addition, the low per capita availability of land, erratic and uneven distribution of rains, undulating topography, improper resource management, traditional cropping programmes and recurrence of droughts having cumulative effect leading to lower productivity and higher risk particularly in dryland farming. This calls for optimum utilization of natural resources by scientific planning and action

oriented approach. In this connection, taking the present day importance of watershed development and capabilities of Remote Sensing, GIS and GPS technologies, the present work was carried out with the help of Karnataka State Remote Sensing Applications Centre (KRSRAC), Bangalore, to develop the agriculture resource action plan for the Medak Nala watershed in Sedam taluk of Gulbarga district. Karnataka State, India.

MATERIAL AND METHODS

Study Area: The Medak Nala watershed selected for resources planning under Integrated Watershed Development Programme (IWDP) is in Sedam taluk of Gulbarga district that falls in Northern Dry Agro-climatic

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