

Research Article

Monitoring sustainability of reclamation of sodic soils at plot level using high resolution satellite data

■ A. K. SINGH AND S. K. SINGH

Received : 16.09.2012; Revised : 05.10.2012; Accepted : 05.11.2012

MEMBERS OF RESEARCH FORUM:

Corresponding author :

A.K. SINGH, J.N.K.V.V., Krishi Vigyan Kendra, Pipraudh, KATNI (M.P.) INDIA
Email: singhak123@rediffmail.com

Co-authors :

S.K. SINGH, J.N.K.V.V., Krishi Vigyan Kendra, Pipraudh, KATNI (M.P.) INDIA

Summary

Soil salinity poses a serious threat for sustainable agricultural production. Out of 6.73 million ha salt affected soils in India, nearly 3.8 million ha is occupied by sodiclands, primarily spread in the Indo-Gangetic alluvial plains in the states of Haryana, Punjab, Uttar Pradesh and parts of Bihar and Rajasthan. In order to utilize these lands, Government of Uttar Pradesh through Uttar Pradesh Bhumi Sudhar Nigam, has been executing a project for reclamation of about 0.24 million ha of sodicland in seventeen districts of the state. Remote Sensing Applications Centre, Uttar Pradesh has been assigned the responsibility of identification and mapping of sodiclands at village level for reclamation and thereafter monitoring land use changes in reclaimed sodic plots in third/fourth year of reclamation. To assess the sustainability of reclamation after three/four years, randomly selected five villages reclaimed in the year 2000, studied for land use/land cover changes using IRS-1D LISS-III and PAN merged satellite data of *Rabi* (winter) season. The study reveals that 86 per cent of the earlier barren sodic plots were under crop. In the case of single and double cropped sodic plots, 97 per cent were under crop in third/fourth year after reclamation. The results thus indicate the sustainability of sodicland reclamation taken up under the project.

Key words : Soil sodicity, Soil reclamation, Sustainability monitoring, Land use

How to cite this article : Singh, A.K. and Singh, S.K. (2012). Monitoring sustainability of reclamation of sodic soils at plot level using high resolution satellite data. *Asian J. Soil Sci.*, 7(2): 296-299.

Introduction

In India, approximately 175 million ha of land is reported to be suffering from one or the other kind of degradation (Das, 1985). Majority of these degraded lands suffer from erosion (water and wind), soil salinity/sodicity, mineral toxicity/deficiency, physical and biological degradation and water logging.

Sodic soils are predominant in the Indo-Gangetic plains encompassing the states of Haryana, Punjab, Uttar Pradesh, parts of Bihar and Rajasthan. Isolated patches of these soils also occur in Madhya Pradesh, Maharashtra and southern states of Andhra Pradesh, Karnataka and Tamil Nadu. The existence of the saline/sodic soils in the country is recorded from ancient times, with the largest area of 1.2 million ha in Uttar Pradesh state.

Reclamation and scientific management of sodic lands in India is necessary for sustaining the agricultural production

and food security. Through appropriate reclamation and management programmes, productivity of these soils can be improved substantially. It has reported that about 55 million tones of food grain can be produced additionally by reclaiming all the available salt affected lands. In order to utilize these sodiclands for higher productivity, a sodicland reclamation project is being executed in seventeen districts of Uttar Pradesh with the World Bank assistance since 1993 and more than 0.22 million ha sodiclands have been reclaimed so far. However, in certain areas, because of topographical and water table conditions, reversion to sodicity conditions have been reported. It, is therefore, imperative to study the condition of reclaimed plots after three to four years in order to assess the sustainability of reclamation.

Application of remote sensing to land degradation studies is not new. Numerous remote sensing studies have involved the mapping and monitoring of salt affected soil