



Sectorial View

THEME - SOIL RESOURCE

Soil Security - The Key to "Food Security"

Food security is one of the greatest global challenges of the 21st century. Fundamentally it is true that "anything and everything" in agriculture start from soils. Therefore sustaining the ability of this precious resource to support the intensification of agriculture, will play a central and critical role in delivering food security. The pressure on land is undoubtedly urgent and growing, but the complexity of soils creates significant challenges. Thus development of a scientific robust dependable base is needed to support key decisions on future soil management. Since soils and food supplies are mutually inclusive global issues, gaining and maintaining international consensus on soil management poses further scientific and diplomatic challenges.

Despite its critical role in supporting human and natural communities, major questions regarding the functional stability of soil remain unanswered. The spatial variation of soil even within a small area makes it difficult to scale from micro-pores (where biogeochemical reactions take place) to profiles and field scales, where management activities can be applied. The unique location of any unit of soil within a landscape exerts control on its dynamic behavior and its responses to any perturbation. Every

chunk of soil is a time related 'memory' of past and present biosphere - geosphere dynamics at that location. This leads to difficulties in the management of soil health on the scales necessary to help increase agricultural productivity and, of equal or greater concern, a lack of confidence in decision-making on how to protect and conserve soil stocks which are globally declining, due to a combination of different processes, for example erosion and dispersion.

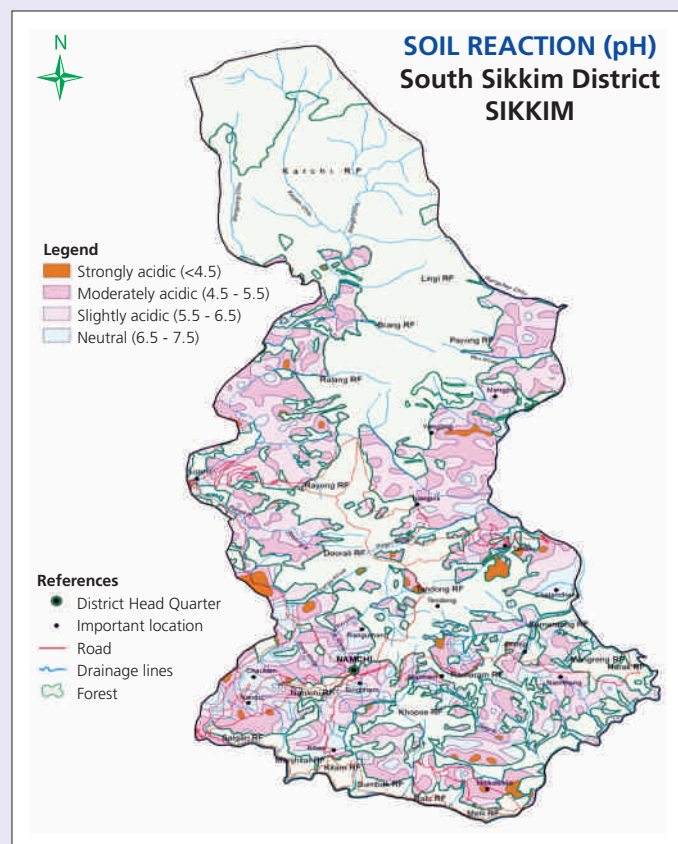
The global per capita arable land area of 0.23 ha will decrease to 0.14 ha in 2050, while the global population is expected to reach over nine billion. During that period the climate volatility will increase, availability of water for agriculture will decrease to the scarcity level, extreme forms of degradation will affect more than 300 million ha of agricultural land, particularly in countries where farmers cannot invest on soil restoration. Under such a grim situation ensuring food security to the teeming millions certainly calls for judicious management of starkly limited land resources. Thus, advancing fundamental understanding of soils is imperative for its better management to ensure that the land remains productive, but equally important is the development of new technologies to minimize waste and maximize high-value resources used in agriculture for achieving food security.

Research Highlights

SOIL RESOURCE INVENTORY AND GENERATED DATABASE

Assessment and mapping of some important soil parameters including macro and micro nutrients for Sikkim state (1:50,000 scale) towards optimum land use planning

In the nutrient mapping project of Sikkim state, soil samples at 0.5 km grid interval were collected from cultivated areas of South, East and West Sikkim districts. Laboratory analysis of South and East districts of Sikkim has been completed. In South district of Sikkim total cultivated area is 430.16 km² (57.35% of TGA). The pH map showed that extremely acidic to strongly acidic soils covers 3.8 per cent area of the total cultivated area of the district.

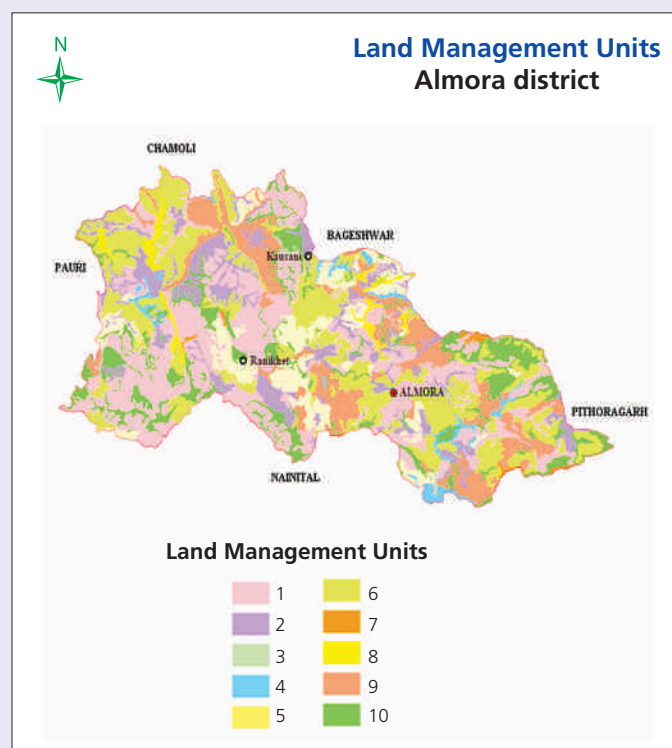


Soil pH map of South Sikkim district of Sikkim State (NER)

National Network Project on Land Use Planning of Almora district, Uttarakhand State

Under National Network Project on Land Use Planning of Almora district – ten production systems have been identified. Wheat-Mustard / Mandua are the major

production system in hill terraces, and rice-wheat-potato in the broad valleys. On the basis of generalized soil map, agro-ecological units, land use / land cover and production systems, 10 Land Management Units (LMU) have been identified. Majority of the farmers (75%) are under marginal to small land holding categories. Agricultural practice is mainly confined to terraced side slopes and valleys, major constraints are adverse climate, limited cultivated land, limited choice of crops, non-availability of quality seeds, fertilizers / chemicals and lack of infrastructure and marketing facilities.



Land Management Units, Almora district

Soil Resource Mapping of Coastal Region of West Bengal on 1:12,500 scale

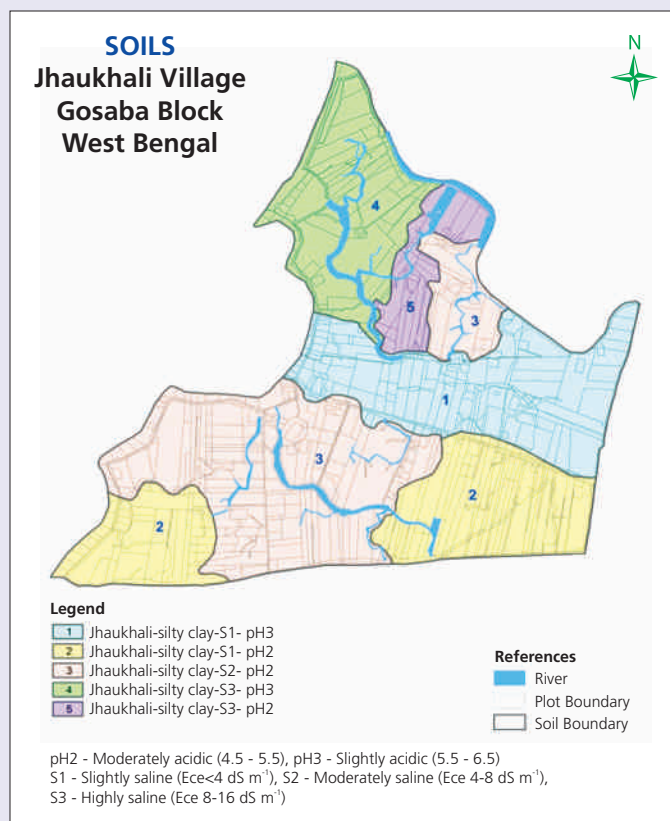
Soil resource mapping on 1:12,500 scale for Gosaba block, 24 Parganas (South) of coastal region of West Bengal was undertaken using IRS LISS IV-P6 data in conjunction with cadastral map as base. Gosaba is one of the main deltaic islands in the Sundarban region, bounded by the Matala and Zilli rivers / creeks and is located between 22°10' to 22°16' N latitude and 88°48' to 88°50' E longitude and has an average elevation of 4 meters from mean sea level. It is the last inhabited area before the deep forests start. Climate is sub-humid with mean annual rainfall of about 1800 mm. Summer paddy is the principal crop and the block as such is prone to sea water inundation. Salinity, acidity and moisture

stress are the major bottlenecks for agriculture. Gosaba community development block has a population of 222,764 out of which 113,827 are males and 108,937 are females.

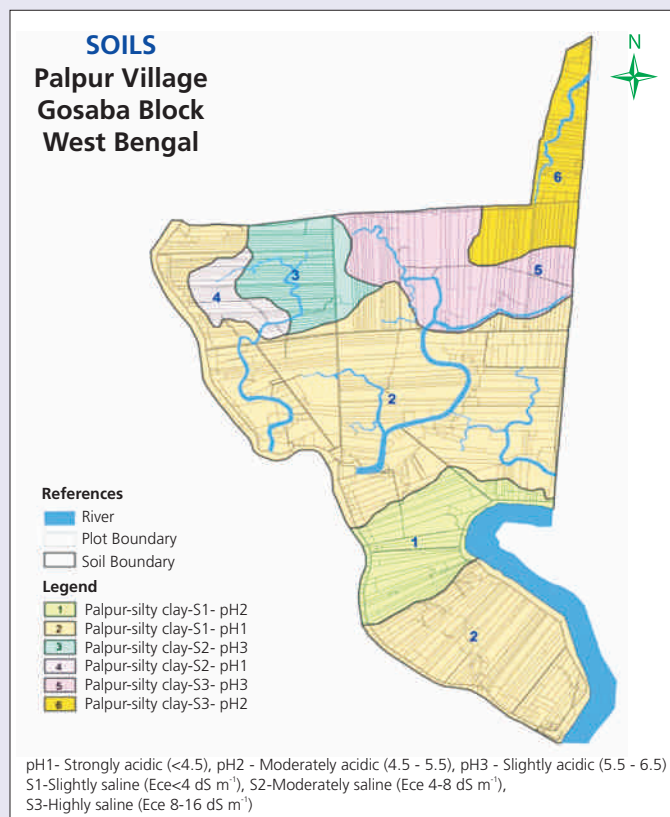
After extensive field work, soil series was established and maps were finalized. Soil series and maps of Jhaukhali and Palpur villages are discussed. Palpur and Jhaukhali soil series are similar in soil morphology and were characterized with deep to very deep, poorly to very poorly drained, olive gray to gray (colour) soils, having, silty clay texture in surface and subsurface. Yellow jarosite mottle below 35 to 51 cm from the surface were the common feature of these soils. The typical differentiating criteria between Palpur and Jhaukhali series was the sequence of sub-horizon soil pH. Palpur series has pH of 4.0 to 5.0 in the sub-soil, whereas pH of Jhaukhali series vary from 6.0 to 6.6. Extent and distribution of these two soil series with phases of salinity and potential acidity is shown in figures. The map also contained the cadastral boundary and thus could be utilized for predicting plot wise information to the farmers.

Potentiality of 1:12,500 scale mapping for transfer of technology

It is well established that soil map could be used for agro-technology transfer. We have tested performance of land shaping and rain water harvesting, a well-known technology for sustainable agriculture in the coastal region in Gosaba block, 24 Parganas (South) and it produces a bountiful second crop of paddy and vegetables at places. We have attempted to understand the reasons for partial adoption of technology in two soil series mapped as Jhaukhali and Palpur. Study revealed that the technology is successful and capable of producing second crop in the soils of Jhaukhali series, which has sub-soil pH 6.1 - 6.5. In the soils of Palpur series, the success of this technology was not consistent perhaps due to sub-soil acidity (pH < 5.5). The study suggested that blanket use of technology may not be enough to produce optimum and protect the resources from degradation. Fine tuning and refinement of technology is always needed depending upon the soil type and local conditions. Soil resource mapping on 1: 12,500 scale may play vital role in refining and modifying the technology by providing much needed soil database. However, more case studies are needed to identify the attributes of soils that make the difference in performance of the technology and can act as vector for transfer of technology under a set of conditions.

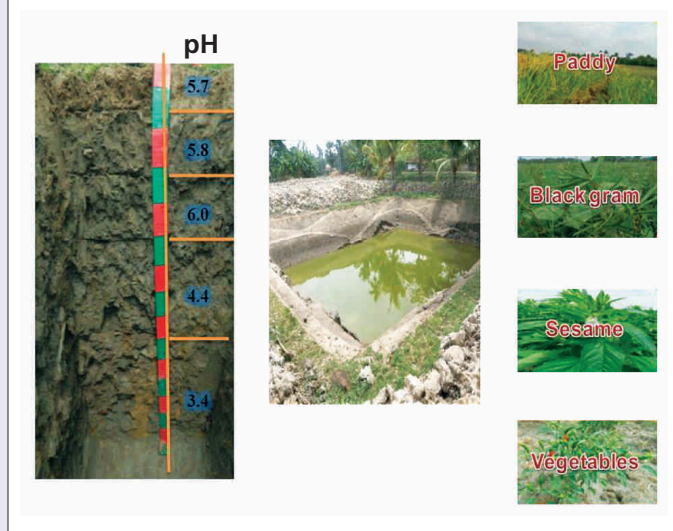


Soils of Jhaukhali village, Gosaba Block, West Bengal



Soils of Palpur village, Gosaba Block, West Bengal

FARM POND TECHNOLOGY



Farm pond technology for farm planning

Research Papers Published

- Bhaskar, B.P. and Sarkar, Dipak (2013). Capability and quality assessment of rice growing hydric soils in Majuli river Island, Assam, India. *Journal of Agriculture and Environment for International Development*, 107:13-33.
- Bhattacharyya, T., Pal, D.K., Mandal, C., Chandran, P., Ray, S.K., Sarkar, Dipak, Velmourougane, K., Srivastava, A., Sidhu, G.S., Singh, R.S., Sahoo, A.K., Dutta, D., Nair, K.M., Srivastava, R., Tiwary, P., Nagar, A.P. and Nimkhedkar, S.S. (2013). Soils of India: historical perspective, classification and recent advances. *Current Science*, 104:1308-1323.
- Deshmukh, V.V., Ray, S.K., Chandran, P., Bhattacharyya, T. and Pal, D.K. (2012). Speciation of smectites in two shrink-swell soils of central Peninsular India. *Clay Research* 31:84-93.
- Nirmal Kumar, Obi Reddy, G.P., Chatterjee, S. and Sarkar, Dipak (2013). An application of ID3 decision tree algorithm for land capability classification, *Agropedology*. 22 : 35-42.
- Obi Reddy, G.P., Sarkar Dipak, Jagdish Prasad and Ramamurthy, V. (2013). Geospatial modeling in assessment of biophysical resources for sustainable land resource management. *Tropical Ecology* 54 : 227-238.
- Patil, N. G., Tiwary, P., Pal, D. K., Bhattacharya, T., Sarkar, D., Mandal, C., Mandal, D., Chandran, P., Ray, S., Prasad, J., Lokhande, M., and Dongre, V. (2012). Soil water retention characteristics of black soils of India and pedotransfer functions using different approaches. *Journal of Irrigation and Drainage Engineering* 139 : 313-324.
- Singh, Dharam, Bhaskar, B.P., Baruah, Utpal and Sarkar, Dipak (2013). Diversification of rice (*Oryza sativa* L.) based cropping systems for higher productivity potential, resource-use efficiency and land use efficiency in major soil series of Upper Brahmaputra valley of Assam. *Indian Journal of Dryland Agriculture Research & Development*, 28: 20-26.
- Singh, S.K., Kumar, Mahesh, Pandey, C.B., Sarkar, Dipak, Ghosh, Anupam, Mukhopadhyaya, S. (2013) Soil properties between irrigation and cropping sequence in Thar desert of India. *Journal of Arid Land Research and Management*, 27 : 17-23.
- Rajula Shanthi, T., Singh, Monika, Sahu, Nisha, M., Surekha, Balaji Rajkumar, S. Sundara Raj, Gopala, De, Kalyan and Ramachandran, S. (2013). Participatory rural appraisal: A holistic approach for getting insight into an agro-ecosystem analysis. *Indian journal of extension education* 13 : 1-9.
- Velmourougane, K., Venugopalan, M.V., Bhattacharyya, T., Sarkar, Dipak, Pal, D. K., Sahu Apeksha, Chandran, P., Ray, S. K., Mandal, C., Nair, K. M., Prasad Jagdish, Singh R. S. and Tiwary, P. (2013). Urease activity in various agro-ecological sub-regions of black soil regions of India. *Proceedings National Academy of Science, India, Section B - Biol. Sci.* DOI 10.1007/s40011-013-0162-1.
- Venugopalan, M.V., Bhattacharyya, T., Sarkar, Dipak, Pal, D. K., Sahu Apeksha, Ray, S. K., Nair, K. M., Prasad Jagdish and Singh, R. S. (2013). Soil dehydrogenase activity in agro-ecological sub regions of black soil regions of India. *Geoderma* 197-198: 186-192.
- Aishwath, O.P., Singh., R., Mehta, R.S., Mishra, B.K., Obi Reddy, G.P. and Nirmal Kumar (2013). Spatial and Temporal assessment of area, production and productivity of cumin in Rajasthan. *International Journal of Seed Spices* 3: 70-76.

PAPERS PRESENTED IN SEMINAR & SYMPOSIA

1. Mahapatra, S.K., Surya, Jaya N., Lal, T. and Sidhu, G.S. (2013). Soil resource based land use planning of Mathura district of Uttar Pradesh for sustainable agriculture production. Paper published in the proceedings of the 100th Session of Indian Science Congress. pp 279-280.
2. Srinivas, S., Natarajan, A., Dharumarajan, S., Lalitha, M., Naidu, L.G.K. and Sarkar Dipak (2013). Application of Remote Sensing and GIS in Farm level Soil Resource Mapping. Paper presented at workshop on 'GIS Applications for watershed management' organised at NAARM, Hyderabad from 20-23rd February, 2013.
3. Naidu, L.G.K. and Ramesh Kumar, S.C. (2013). Agricultural Potentials and Constraints in Four Backward Districts of Southern India. Paper presented in the National Workshop on "Natural Resource Management in Backward districts in India" organized by NBSS&LUP, Nagpur during 20-21st February 2013.
4. Obi Reddy, G. P. (2013). Remote sensing and GIS for spatial decision support in sustainable land resource management. Paper presented in the workshop on "GIS Applications for Natural Resource Management" at NAARM, Hyderabad during 20-23rd February 2013.

BOOK CHAPTER

1. G. P. Obi Reddy and Dipak Sarkar (2013). Remote sensing and GIS for spatial decision support in sustainable land resource management. In: "Geospatial Technologies in Natural Resource Management" (S.K. Soam et al.). pp. 259-277.

RESEARCH BULLETINS

- Walia, C.S., Surya, Jaya N., Dhankar, R.P., Sharma, J.P. and Sarkar, Dipak (2013). Generation of soil database for Khulgaad watershed development in Almora district of Uttarakhand. NBSS Publ. 1043. NBSS&LUP, Nagpur pp. 130

ATLAS

- Banerjee Tapati, Sarkar Dipak, Mukhopadhyay, S. Mukhopadhyay, J., Mondal, C. and Singh, S.K. (2013) Land Resource Atlas of West Bengal, NBSS Publication 154, NBSS&LUP, Nagpur pp. 164.

Training Organised

Under NNRMS (ISRO) Sponsored Programme

- Organized 21 days Training programme on "Application of Remote Sensing and GIS in Natural Resource Management" at Regional Centre, Delhi during Jan. 16 to Feb. 5, 2013. Nineteen State and Central Government Officers participated in the training.



Faculty and trainee officers of the 21 days NNRMS, ISRO, sponsored Training programme organized by Regional Centre, Delhi during January 16 to February 5, 2013.

- The Division of Remote Sensing Application, Nagpur organized National level 21 day training programme on "Remote Sensing and GIS Applications in Natural Resource Management" from February 12 to March 4, 2013. Nineteen trainee officers in the field of agriculture, environment, geology, fisheries and animal sciences representing Andhra Pradesh, Karnataka, Tamilnadu, Maharashtra, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Gujarat and Jammu & Kashmir participated in the programme.



Dr. D.K. Das, Chief Guest, Dr. S.N. Das, Guest of Honour, Dr. Dipak Sarkar, Director, NBSS & LUP, Nagpur, Dr. Rajeev Srivastava, Programme Coordinator and Dr. M.S.S. Nagaraju, Course Coordinator during the valedictory programme

- Regional Centre, Jorhat organized 21 days Training on “Application of Remote Sensing and Geographical Information System for Land Resource Studies towards Land Use Planning” to the Officers (25 nos.) of Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim and Assistant / Associate Professors of Assam Agricultural University from 23rd April to 13th May 2013 at Regional Centre, Jorhat, Assam.

Trainings Organized Under Tribal Sub Plan (TSP) Scheme

- Two weeks Training Programme entitled “Application of Remote Sensing and Geographical Information System for Soil Resource Inventory towards Land Use Planning” under TSP sponsored scheme has been organized from 12-25th February 2013 at Aizawl, Mizoram.



A view of field exposure during Training on “Application of Remote Sensing and Geographical Information System for Soil Resource Inventory towards Land Use Planning”, held during 12-25th February, 2013 at Aizawl, Mizoram

- Imparted training to the farmers of Bhomoraguri Missing Gaon of Pub Teok Circle, Jorhat district, Assam on **improved cultivation practices of Rabi crops** with efficient use of irrigation water, fertilizers, manures and pesticides, pig rearing and vermi-composting under Tribal Sub Plan (TSP) programme.

Soil Survey and Mapping Training

- Regional Centre, Bangalore organized 21 days training program on “Soil survey and land use planning” for the State soil survey and soil conservation Dept officials of Govt. of Kerala during 26th March to 15th April, 2013. Twenty officers from Departments of Agriculture attended this training programme.

STAFF TRAINED

- Dr. Nisha Sahu, Scientist, GIS Section attended training programme on “Multivariate Statistics Using SAS” held during 9-16 Feb., 2013 at CIFE (ICAR), Mumbai.
- Shri. S.G. Anantwar, Assistant Chief Tech. Officer, Division of Soil Resource Studies, Nagpur attended training programme on “Competency Enhancement Programme for Technical Officers” held during May 13-22, 2013 at NAARM, Hyderabad.

Important Meetings

The fifth Research Advisory Committee (RAC)

Meeting of NBSS & LUP was held during 4-5th May, 2013 at HQrs., Nagpur under the Chairmanship of Dr. M. Velayutham. Dr. A.K. Sikka, DDG (NRM), ICAR also attended this important final meeting of RAC. All the Heads of Regional Centres and Divisions were also invited for the final session. He also flagged importance of detailed land resource inventory for better utilization and planning of land to meet the demands of the growing population. He appreciated all the RAC members a few of which had a long association with NBSS&LUP for their efforts to steer the Institute for carrying out research for future. Dr. Sikka reiterated that anything and everything in agriculture starts from soils, and reaffirmed that soil is critical and so important for the society. It is in that perspective NBSS&LUP should direct its attention for future research programme.



From left Dr. Dipak Sarkar, Director, NBSS&LUP, Dr. A.K. Sikka, DDG (NRM), ICAR, New Delhi and Dr. M. Velayutham, Chairman RAC interacting in the RAC Meeting held on 4th May 2013 at HQrs., Nagpur

NAIP Workshop

On “Natural Resource Management in Backward districts of India” was organized during 21-22 February, 2013 at Hqrs., Nagpur.



From L-R Dr. A. Chaturvedi, Head LUP Division, Dr. A.P. Shrivastava, National Coordinator, NAIP, Dr. Dipak Sarkar, Director, NBSS&LUP and Dr. K.K. Satpathy, Director, NIRJAFT, Kolkata discussing in NAIP Workshop on Natural Resource Management in Backward districts of India held on 21st Feb. 2013 at Hqrs., Nagpur

Consortium Advisory Committee (CAC)

Meeting of NAIP Project “Georeferenced soil information system for land use planning and monitoring soil and land quality for agriculture (Component-4)” was organized on 03rd March, 2013 and Consortium implementation Committee (CIC) on 04th March, 2013 at Hqrs., Nagpur to discuss the progress and future programme of the project. Thirteen working reports of the project were released.



Dr. D.K. Das, Former Head, Department of Agricultural Chemistry and Soil Science, New Delhi releasing the NAIP publications along with Dr. Dipak Sarkar, Director and others during CIC meeting held on 4.3.2013 at Hqrs., Nagpur

Awards/Honors/Recognition

- Dr. G.S.Sidhu, Principal Scientist & Head, Regional Centre Delhi was awarded ‘**National Leadership Award-2012**’ in Natural Resource Management by Soil Conservation Society of India.
- Dr. S.K. Singh, Principal Scientist and Head, Regional Centre, Kolkata has been nominated as Member of Independent Committee for verification of the (DPRs) by IWMP in West Bengal.
- Second best poster presentation award for the research paper “Generation of farm specific land resources database for effective implementation of watershed development programs- a case study of Magadi model watershed in Karnataka authored by K.V. Niranjana, R. Hegde, A. Natarajan, L.G.K. Naidu and Dipak Sarkar presented during Farmers First National seminar held at Bangalore, organized by CSWRTI, Dehradun (14-16 March 2013).
- Sh. Roshan Wakode, Ph.D. (LRM) student under the supervision of Dr. Jagdish Prasad has got the prestigious Jawaharlal Nehru Fellowship of Govt. of India for pursuing his Ph.D. work.

VISIT ABROAD

- Dr. Tapas Bhattacharyya, Head Division of SRS has attended the Workshop on “**Benefits of Soil Carbon Rapid Assessment Process**” hosted by the Joint Research Centre of the European Commission – JRC in Ispra (Verese), Italy held during March 18-22, 2013.

Other Activities

Live Radio interview

- Dr. Rajendra Hegde gave a Live Radio interview on “Soil and water conservation and watershed development based on LRI” at “Bangalore Brains” program on FM rainbow, Bangalore on 13th May 2013.

Tribal Sub-Plan programme

- Commissioned mini water supply scheme in Kerehadi-A and B. Facilities extended to Devanadi and Kerehadi A & B was inaugurated by Dr. Dipak Sarkar, Director on 28-01-2013 in the presence of Dr. M.A. Balasubramanyam, CEO of SVYM and Dr. L.G.K. Naidu, Head, Regional Centre, Bangalore.

- Initiated mini water supply work in Chamanahally hamlet
- Conducted one day training on cotton production technology on 26-4-13 and distributed Bt cotton seeds to tribal farmers.



Inauguration of Mini water supply function held at Devanadi and Kerehadi A & B by Dr. Dipak Sarkar, Director, NBSS&LUP on 28.01.2013.

KRISHI VIGYAN MELA

Participation in Kisan Mela / Farmer's Day

- Regional Centre, Kolkata participated in the exhibition for displaying the activities of NBSS & LUP in XI Agricultural Science Congress during 7-9th February, 2013 at OUAT Bhubaneswar.



Scientists of Regional Centre, Kolkata in presence of Dr. Dipak Sarkar, Director, NBSS&LUP during XI Agricultural Science Congress held on 7th February, 2013 at OUAT Bhubaneswar.

- Participated and exhibited the Bureau's activities during the following exhibitions
 - Raman Science Centre, Nagpur from 9th to 13th January, 2013,

- National Expo (AGROVISION, 2013) at Reshimbagh, Nagpur from 24th to 27th January, 2013,
- Rashtriya Nimboovargiya Kisan Mela at NRCC, Nagpur from 22-23 February, 2013.



Scientist of the Bureau's HQrs. discussing with the visitors in National Expo (AGROVISION, 2013) held at Reshimbagh, Nagpur during 24-27th January, 2013

- Staff of Regional Centre, Jorhat participated in the Farmer's day on 06.02.2013 held at Regional Rice Research Station, Titabar, Jorhat and displayed maps and data products of the Regional Centre.
- Scientists of Regional Centre, Jorhat organized an Interaction Meet with the tribal farmers of Bhomoraguri Missing Gaon, Teok, Assam on 13rd February, 2013. Dr. K.M. Bujarbaruah, Hon'ble Vice Chancellor, Dr. Girin Hazarika, Dean, Faculty of Agriculture, Assam Agricultural University and Dr. Dipak Sarkar, Director, NBSS&LUP (ICAR), Nagpur participated in the interaction meet and gave advise to the farmer and answered their queries.
- Regional Centre Delhi participated in "*PUSA KRISHI VIGYAN MELA -2013*" held at IARI, New Delhi, during March 6-8, 2013 and displayed various maps, publications & high-lighting activities of the Bureau besides interaction with scientists, farmers and other visitors. Leaflets highlighting the mandate, activities, and achievements of the institute (both in Hindi and English) were distributed amongst the visitors.



NBSS & LUP participated in Pusa Krishi Vigyan Mela, during March 6-8, 2013 inaugurated by Sh. Sharad Pawar, Hon'ble Minister of Agriculture, Govt. of India. Many Dignitaries, Scientists, Farmers, Students & others visited the stall.

New Entrants / Transfer

- Dr. D. S. Singh, Principal Scientist has been transferred from Division of RSA to Regional Centre, Kolkata on 28.03.2013.
- Sh. Parashuram Prasad Kharwar Technical Assistant transferred from Regional Centre, Udaipur to Regional Centre, Delhi on 10.04.2013.
- Shri. Ambalal Bhoi, Driver (T-1) has been transferred from Hqrs. Nagpur to Regional Centre, Udaipur on 30.03.2013.
- Shri. Vasu D. joined as Scientist (Soil Science-Soil Chemistry/Fertility/Microbiology) on 10.04.2013 (FN).
- Shri Vikas joined as Scientist (Agril. Statistics) on 12.04.2013 (FN).
- Shri Roomesh Kumar Jena joined as Scientist (Soil Science-Soil Chemistry / Fertility / Microbiology) on 12.04.2013 (FN).
- Shri Rajesh Kumar Meena joined as Scientist (Soil Physics / Soil and Water Conservation) on 12.04.2013 (FN).
- Shri Roshan Lal Meena joined as Scientist (Agronomy) on 12.04.2013 (FN).
- Miss Shruti Sharma joined as Assistant on 17.05.2013 (FN).
- Dr. Shreyasi Gupta Choudhury, Scientist (Soil Science) has joined at NBSS&LUP, Regional Centre, Kolkata on 20.05.2013 (FN) after relieving from CSSRI, Kamal.

STAFF PROMOTION

- Dr. S. Bandyopadhyay promoted from Scientist with RGP 6000/- to Scientist with RGP 7000/- on 04.04. 2013.

- Shri D.P. Dutta promoted from Technical Officer to Senior Technical Officer.
- Sh. R.G. Gawande, from Assistant Chief Technical Officer to Chief Technical Officer.
- Sh. Shashank Bobde from Assistant Chief Technical Officer to Chief Technical Officer.
- Dr. S.S. Nimkhedkar from Assistant Chief Technical Officer to Chief Technical Officer.

STAFF RETIREMENT

- Shri Y. Chikkayellappa, Senior Technical Assistant Regional Centre, Bangalore retired on 31.03.2013.
- Smt. Y. Sathyalakshamma, Assistant, Regional Centre, Bangalore retired on 30.04.2013.
- Shri Dhir Singh, Senior Technical Assistant, Regional Centre, Kolkata retired on 30.04.2013.
- Shri T.K. Nandi, Senior Technical Assistant Regional Centre, Kolkata retired on 30.04.2013.
- Shri S.D. Mane, UDC, HQrs., Nagpur on 31.05.2013.
- Shri H. Rama, SSS, Regional Centre, Bangalore retired on 31.05.2013.
- Dr. A. Natarajan, Pri. Scientist, Regional Centre, Bangalore retired on 30.06.2013.
- Dr. M. Swaminathan, Chief Technical Officer, Regional Centre, Kolkata retired on 30th June 2013.
- Dr. Nanak Singh, Chief Technical Officer, Regional Centre, New Delhi on 30.06.2013.
- Shri B.N. Mukherjee, SSS, Regional Centre, Kolkata on 30.06.2013.

OBITUARY

- Shri B. K. Guchait, SSS, Regional Centre, Kolkata expired on 03.06.2013

Visitors

Headquarters, Nagpur

- Dr. A.K. Sikka, Deputy Director General (NRM), ICAR, New Delhi visited NBSS&LUP on 4th May 2013.
- Mr. Gajendra Pannikar, Agriculture Officer, CIPMC, Nagpur alongwith 20 trainee officers visited museum on 06th March, 2013.
- Agriculture Department of RKVY alongwith 30 farmers visited museum on 08.02.2013
- 50 farmers alongwith 2 Officers (Statistics) of Damoh district, Madhya Pradesh visited NBSS&LUP (ICAR), Nagpur museum on 18.02.2013.
- 44 farmers alongwith 2 Agriculture Officers of Damoh district, Madhya Pradesh visited the NBSS&LUP museum on 12.06.2013.

Regional Centre, Bangalore

- Sri Vishwanath Hotagi, IFS, Conservator of Forests, Govt. of Madhya Pradesh visited the Regional Centre on 2-1-2013.
- Sri R. M. Patil, Ex Minister, Karnataka & Chairman, BIRD KVK, Belgaum visited the Regional Centre on 23-1-2013.
- Dr P. K. Mishra, Director, CSWRTI (ICAR), Dehradun visited the Regional Centre on 23-1-2013.
- Dr.M.Velayutham, Former Director, NBSS & LUP and Chairman, RAC visited the Regional Centre on 16th March 2013.

- Dr S.G. Patil, Dean Education, UAS Raichur visited Regional Centre, Bangalore and had discussion with scientists on 12-2-2013.
- Dr Shekar Muddu, Associate Professor (Civil Engineering), Indian Institute of Science, Bangalore visited the Regional Centre on 5-1-13.
- Dr H. Venkatesh, Senior Manger (R&D), De-V-Gen, Seed Company Hyderabad visited the Regional Centre, Bangalore on 5-1-2013.
- 34 M.Sc. students of Doon University, Dehradun accompanied with 3 faculty members of Natural resources management and environmental sciences, visited the Regional Centre on 22-1-2013.
- 43 B.Sc (Agri) students and 2 teachers from Kerala Agricultural University visited the centre on 6th March 2013 and were briefed on the activities and achievements of the Bureau.
- 40 students (10th std) and 2 teachers from Sudarshana Vidyamandir school, Jayanagar, Bangalore visited the centre on 8th March 2013 and they were shown Pedonarium and laboratory of the Regional centre. Soil formation, processes and soil conservation measures were explained to the students.

Regional Centre, Jorhat

- Syed Iftikhar Hussain, IAS, Commissioner, Upper Assam Division Jorhat, visited on 13.05.2013.
- Dr. Girin Hazarika, Dean, Faculty of Agriculture, AAU, Jorhat visited on 23.04.2013.
- Dr. Dipti Bora, Dean, Faculty of Agriculture, Assam Agricultural University, Jorhat, visited on 13.05.2013.
- Dr. Hemen Bhattacharya, Director of Extension, Assam Agricultural University, Jorhat, visited on 13.05.2013.

Regional Centre, Kolkata

- Dr. A.K. Sikka, DDG (NRM), ICAR, New Delhi visited Regional Centre Kolkata on 14th May, 2013



Dr. S.K. Singh, Head, Regional Centre, Kolkata explaining about Soil Museum of Regional Centre, Kolkata to Dr. A.K. Sikka, DDG (NRM), ICAR, New Delhi on 14.5.2013 while Dr. Dipak Sarkar, Director and other Sr. Scientists look on.

- Dr. N.S. Randhwa, Secretary, ASRB, New Delhi visited Regional Centre, Kolkata on 30th June, 2013.
- Dr. V.N. Sharda, Member, ASRB, New Delhi visited Regional Centre Kolkata on 14th May, 2013



Dr. S.K. Singh, Head, Regional Centre, Kolkata presenting the scientific activities of the Centre in presence of Dr. V.N. Sharda, Member, ASRB, New Delhi and other Sr. Scientists look on.

From
Director's
desk...



Dr. Dipak Sarkar
DIRECTOR
NBSS&LUP (ICAR), Nagpur

VISION 2050 DOCUMENT RECENTLY PREPARED BY NBSS&LUP

It is being increasingly realized that soil and land resources of the country are to confront serious challenges (and threats) in future. Shrinking land resources as a result of country's galloping population and continued degradation, depleted nutrient stock, changing climate and its impact on soils and land use, misuse of prime agricultural land for non-agricultural purposes and non-judicious planning of land use will, among others, be the key challenges to overcome. Alongside, there will be of course opportunities emerging in the form of new science, tools and techniques. Various scenarios developed for 2030 on the state of soil and land resources base and issues related to their utilization projected a grim picture. The 2050 scenario appears even grimmer and hence would necessitate a change in paradigm in formulating and implementing the soil survey and land use planning research programmes in the country. This, in turn, would need the National Bureau of Soil Survey and Land Use Planning (NBSS&LUP) to revisit the priorities identified earlier and developed the strategies to overcome the challenges and develop perspective vision which could be translated through proactive, novel and innovative research approach based on cutting edge science. I am extremely pleased to present

the Vision 2050 document of the NBSS&LUP that reflects the collective understanding, aspirations and determination of its staff to realizing the vision. The document highlights the issues and strategies relevant for more than three decades. I thank Dr. S. Ayyappan, Secretary, DARE, Govt. of India and Director General, ICAR, New Delhi for laying down a road map of Indian Agriculture vide Vision 2050 through his visionary wisdom and also for inspiring the NBSS&LUP to undertake this important task. I take this opportunity to also thank Dr. A.K. Sikka, Deputy Director General (NRM), ICAR and Dr. B. Mohan Kumar, Assistant Director General (Agro & AF), ICAR for providing much needed support, guidance and encouragement in preparing the document. I also thank all the Heads of the Divisions and Regional Centres and In-charge of different Sections, Units and Cell for providing valuable suggestions from time to time during the preparation of the document. I am happy to put on record the genuine pains taken by the members of the Editorial Committee in preparing this extremely important document. The sincere involvement of the stakeholders during its preparation is gratefully acknowledged. A vision not followed by actions remains a dream; the NBSS & LUP is, therefore, committing to itself, the ICAR and the Society its firm resolve in undertaking sincere and dedicated efforts towards realizing the vision.

Published by : Dr. Dipak Sarkar, Director, NBSS&LUP, Amravati Road, Nagpur - 440 033
Phone : (0712) 2500386, 2500664, 2500226 Fax : (0712) 2500534
Email : director@nbsslup.ernet.in, sarkardeepak@rediffmail.com

Editor : Dr. P. Chandran, Pr. Scientist and In-Charge, PME Cell, HQrs., Nagpur

Technical Support : Dr. S.S. Nimkhedkar, Chief Tech. Officer, Dr. A.P. Nagar, Asstt. Chief Tech. officer and Mr. P. S. Butte, Tech. Officer

Lay out & Printing : Mr. S.K. Arora, Chief Printing officer & In-Charge, Printing Section

DTP : Mrs. Vaishali Arbat, Steno, PME Cell