Proceedings of the 3rd Meeting on "Development of the Unified National Soil Information System (UNSIS)" under National Geospatial Policy, held at ICAR-NBSS&LUP, Nagpur on September 30th 2025 (virtual mode)

As part of the National Geospatial Policy (NGP)-2022, the 3rd Meeting on the 'soil' theme with a focus on "Development of the Unified National Soil Information System (UNSIS)" was conducted at ICAR-National Bureau of Soil Survey and Land Use Planning (ICAR-NBSS&LUP), Nagpur, on 30th September 2025 in virtual mode. 34 participants from ICAR and SAUs, attended the meeting (Annexure-1).

- The meeting commenced with welcome of Guests and participants by Dr. G.P. Obi Reddy, Principal Scientist & Head, Division of Remote Sensing Applications, ICAR-NBSS&LUP and Nodal Officer, Soil Theme, who also provided an overview of the meeting's objectives.
- Dr. N.G. Patil, Director, ICAR-NBSS&LUP, emphasized the significance of UNSIS in policymaking and planning, highlighting the need to consolidate soil data into a unified national platform. The Director further opined that the Soil and Land Use Survey of India (SLUSI), which generates valuable scientific data on soil and land characteristics for soil and water conservation planning and resource management, should be integrated into UNSIS. Dr. Patil also urged all nodal officers from SAUs to extend their cooperation and underscored the need for a standardized data-sharing format to promote accessibility and national collaboration.
- The Guest of Honour, Shri Srikant Sastri, Chairman, GDPDC, Delhi, highlighted the importance of data liberalization and the integration of soil data onto a single national platform. He emphasized the abundance of soil information available within ICAR institutes and SAUs and underscored the need to consolidate this valuable resource on a unified platform. He noted that *"Soil"* is one of the 14 Fundamental Themes identified under NGP, and that work on these themes, will have a profound long-term impact and persistent efforts and constant follow up is required for data acquisition from different partners. Shri Sastri further mentioned that ICAR-NBSS&LUP has been entrusted with the task of developing a UNSIS, which will serve as a critical foundation for enhancing the effectiveness of major agricultural initiatives such as irrigation, weather forecasting, crop modelling, seed management, and credit systems. He shared insights from the Operation Dronagiri pilot project conducted in Varanasi district, where upfront soil-health information proved instrumental in improving outcomes. Shri Sastri expressed appreciation to all nodal officers and collaborating institutions, including all the ICAR NRM institutions dealing with the soil, the ISRO-NRSC, SLUSI, and 28 SAUs, for their collective efforts towards developing UNSIS. In conclusion, he urged all stakeholders to ensure the following points, 1. Data interoperability – through adoption of common standards for integrating diverse datasets. 2. Data accessibility – enabling ease of search and improved user experience.3-AI readiness – ensuring that the consolidated data can effectively serve as a catalyst for India's AI-driven agricultural transformation.
- The Chief Guest, Dr. A. K. Nayak**,** Deputy Director General (NRM), ICAR, New Delhi, emphasized the critical importance of the UNSIS under the National Geospatial Policy for diverse stakeholders, including policymakers, researchers, and farmers. He highlighted that UNSIS would serve as a foundational framework for evidence-based decision-making in sustainable land use, resource management, and agricultural productivity enhancement. Dr. Nayak underscored the need to harmonize existing soil datasets collected by various organizations to ensure consistency and interoperability. He pointed out that scale-related

variations remain a major challenge in integrating soil data from multiple sources and emphasized the necessity of adopting uniform standards and protocols for data resolution and classification. Furthermore, he recommended that chemical property databases should be updated at regular intervals of every 3–5 years to maintain their scientific relevance and policy utility. He appreciated the efforts of ICAR-NBSS&LUP for taking the initiative to bring together soil data from various ICAR institutes and State Agricultural Universities (SAUs) under a unified framework. He acknowledged that such efforts mark a significant step towards creating a comprehensive national soil information repository. Dr. Nayak also stressed that persistent efforts and continuous follow-up are essential for effective data acquisition from diverse partner organizations. He assured that ICAR Headquarters**,** under the guidance of the Director General, ICAR**,** would extend full support to facilitate the inclusion of SLUSI and other key agencies in this collaborative platform. He expressed confidence that with collective commitment, UNSIS will emerge as a robust, dynamic, and policy-relevant system serving national agricultural and environmental goals.

- Dr. G.P. Obi Reddy delivered a detailed presentation on the development of the UNSIS, highlighting its importance under the National Geospatial Policy (NGP). He discussed various key aspects of data acquisition, data processing, database management, and the roadmap for building UNSIS in collaboration with ICAR, NRSC, SLUSI, SAUs, and state agricultural departments. He also outlined the scope, characteristics, and challenges of assembling soil datasets while emphasizing the need for coordination among national organizations. On BHOOMI Geo-portal, he showcased data accessibility, metadata formats, and functionalities related to soil data. He also mentioned that a dedicated online portal is under developing to collect the soil data in a standard format from the Nodal officers. His presentation highlighted the significance of integrating diverse soil resources into a unified platform to enhance data-driven decision-making for policymakers, planners, and farmers.

Later, Nodal officers from ICAR, SLUSI, NRSC shared their points on data availability, sharing and related aspects

- Officers from the SLUSI**,** Bengaluru and Kolkata, participated in the meeting and informed the house that the Chief Soil Surveyor Officer of SLUSI can take the decision on data sharing for UNSIS. The Director, ICAR-NBSS&LUP advised SLUSI to nominate the nodal officer to ensure proper representation and coordination in future deliberations.
- Dr. G. Sujatha, Head, Division of Soils, NRSC, provided an update on the status of data availability with NRSC and expressed the Centre’s interest in actively participating in the UNSIS initiative. She informed that NRSC maintains comprehensive databases on land degradation assessment and land use/land cover (LULC) and those things can be shared as APIs. However, she clarified that formal permission from the competent authority would be required prior to sharing these datasets. The Director advised that the designated nodal officer from NRSC may take the initiative to obtain the necessary approvals from higher authorities. He further assured that any support required from ICAR-NBSS&LUP in facilitating this process would be duly extended.
- Dr. S K Behera, Principal Scientist & Head at ICAR-IISS, Bhopal, discussed about the data availability with IISS. He assured that the institute's datasets could be made available for UNSIS and contributing to comprehensive soil data integration (Action: ICAR-IISS).
- Dr. Brij Lal Lakaria, Principal Scientist & Head at ICAR-IISWC, RC, Chandigarh, discussed IISWC is currently working on soil erosion assessment and soil loss. He assured that the institute's datasets on soils could be made available for building the UNSIS, contributing to comprehensive soil data integration (Action: ICAR-IISWC).

- Dr. Priyabatra Santra, Principal Scientist & Head at ICAR-CAZRI, Jodhpur, presented soil datasets of wind erosion from hot arid ecosystems compiled at the institute. He highlighted the availability of soil profile and land degradation data, emphasizing their contribution to UNSIS for better soil resource management in western India (Action: ICAR-CAZRI).
- Dr A K Rai and Dr Amaresh ICAR-CSS&RI presented the updates on soil salinity mapping and informed the house that the available datasets will be shared with UNSIS.
- Dr Gopal Mahajan, Sr Scientist, ICAR-CCARI informed the house the datasets available on coastal soils at ICAR-CCARI will be shared with UNSIS.
- Dr Baskar Gaikwad, Sr. Scientist, ICAR-NIASM informed the house that they have prepared the soil nutrient index map based on soil health data and nutrient index map can be shared with UNSIS.
- Dr. Sailaja (ANGRAU, Guntur) reported on geo-referenced soil profile datasets of Andhra Pradesh, stating that their availability for UNSIS would be subject to university approval for sharing (Action: ANGRAU, Guntur).
- Dr. Satish Ayyappan, Professor at UAS, Bengaluru, shared that soil data from the Sujala-III and REWARD projects, including 94,000 surface samples and 4,000 soil profiles, could be made available for UNSIS, contributing valuable datasets for soil resource management with necessary approval from the funding agency (Action: UAS, Bangalore).
- Dr. B.R. Jagdeesh (UAS, Dharwad) nodal officer from UAS, Dharwad shared insights on soil data generated under the REWARD, PDWD, and Sujala-III projects, highlighting their potential contribution to UNSIS (Action: UAS, Dharwad).
- Dr. R.N. Katkar (PDKV, Nagpur) provided soil fertility analysis data and agreed to share the soil fertility datasets of Maharashtra. He also discussed various challenges in data compilation for UNSIS integration (Action: PDKV, Akola).
- Dr. Rakesh Banwasi (IGKV, Raipur) presented a geospatial dataset of 4,510 samples and shared soil fertility assessment data collected under various projects, confirming its availability for UNSIS integration (Action: IGKV, Raipur).
- Dr. M C Kasture, Head (BSKVV, Dapoli) provided soil fertility analysis data and agreed to share the soil fertility datasets of Maharashtra. He also discussed various challenges in data compilation for UNSIS integration and requested for funding support (Action: PDKV, Nagpur).
- Dr. B B Vashishit (PAU, Ludhiana) informed that they have soil fertility assessment data collected under various projects, confirming its availability for UNSIS integration (Action: PAU, Ludhiana).
- Dr. K K Sharma (SAU, Jobner,) informed that they have soil fertility assessment data collected under various projects, confirming its availability for UNSIS integration (Action: SAU, Jobner).

Actionable Outcomes

- Besides, the use of existing research data, Director, NBSS&LUP urged all Nodal Officers to compile soil datasets available from MSc and Ph.D. theses of their respective University to contribute to UNSIS (Action: All nodal officers).
- Defining SLUSI's role in integrating soil datasets will help in consolidating efforts and ensuring seamless collaboration among different institutions.

- Establishing an information-sharing mechanism for universities that will promote collaboration, enable easy data exchange, and enhance the overall effectiveness of UNSIS.
- Manpower and funding challenges are the concerns to ensure the smooth implementation, maintenance, and scalability of UNSIS.
- Region-specific approach was suggested for effective management and conducting quarterly review meetings as well as workshops for effective coordination, enhance data collection efforts, and facilitate regular progress assessments.
- Urged the other SAU's to identify the nodal officers to streamline data collection and coordination, ensuring efficient management and integration of soil datasets into UNSIS.
- Encouraging SAUs to collaborate with Nodal Organization of ICAR-NBSS&LUP will promote data harmonization, ensuring consistency and accuracy in soil datasets across different institutions.
- Developing a national soil database with proper metadata will enhance usability, allowing policymakers, researchers, and farmers to access and utilize soil information effectively.
- Nodal Organization will provide standardized soil data formats to facilitate data entry and sharing for seamless integration into UNSIS and interoperability across various platforms.

The meeting ended with a formal vote of thanks.

List of participants in the 3rd UNSIS meeting

Annexure-1

S.No.	Name of Participant	Affiliation
1.	Dr. A.K. Nayak	DDG (NRM), ICAR, New Delhi
2.	Sh.Srikant Sastri	Chairman, GDPDC, New Delhi
3.	Dr. N.G. Patil	Director, ICAR-NBSS&LUP, Nagpur
4.	Dr. G.P. Obi Reddy	Pr. Scientist & Head, RSA, ICAR-NBSS&LUP, Nagpur
5.	Dr. P. Tiwary	Pr. Scientist & Head, SRS, ICAR-NBSS&LUP, Nagpur
6.	Dr. H. Biswas	Pr. Scientist & Head, LUP, ICAR-NBSS&LUP, Nagpur
7.	Dr V Ramamurthy	Pr. Scientist & Head, RC- Bengaluru, ICAR-NBSS&LUP
8.	Dr Jaya N. Surya	Pr. Scientist & Head, RC- Delhi, ICAR-NBSS&LUP
9.	Dr. F.H. Rahman	Pr. Scientist & Head, RC- Kolkata, ICAR-NBSS&LUP
10.	Dr. Sanjay K. Ray	Pr. Scientist & Head, RC- Jorhat, ICAR-NBSS&LUP
11.	Dr. B. L. Mina	Pr. Scientist & Head, RC- Udaipur, ICAR-NBSS&LUP
12.	Dr. Partha P. Adhikary	Pr. Scientist, RSA, ICAR-NBSS&LUP, Nagpur
13.	Dr. U. Surendran	Pr. Scientist, RSA, ICAR-NBSS&LUP, Nagpur
14.	Dr. Nirmal Kumar	Sr. Scientist, RSA, ICAR-NBSS&LUP, Nagpur
15.	Dr. Sunil B.H	Scientist, RSA, ICAR-NBSS&LUP, Nagpur
16.	Dr. Priyabrata Santra	Pr. Scientist & Head, Nodal Officer, ICAR-CAZRI, Jodhpur
17.	Dr. S K Behera	Pr. Scientist & Head, Nodal Officer, ICAR-IISS, Bhopal
18.	Dr. Brij Lal Lakaria	Pr. Scientist & Head, ICAR-IISWC, Dehradun
19.	Dr. A. K. Rai	Pr. Scientist & Head, Nodal Officer, ICAR-CSSRI, Karnal
20.	Dr. Amaresh Chaudhary	Scientist, ICAR-CSSRI, Karnal
21	Dr. G. Sujatha	Head, Division of Soils, ISRO-NRSC, Hyderabad
22.	Dr. Williams	SSO, SLUSI Bengaluru Centre,
23.	R.L. Meena	SSO, SLUSI Kolkata Centre,
24.	Dr. Gopal Mahajan	Sr Scientist, Nodal Officer, ICAR-CCARI, Goa
25.	Dr. Baskar Gaikwad	Sr Scientist, Nodal Officer, ICAR-NIASM, Baramati
26.	Dr. Sailaja Vinnakota	Pr. Scientist & Nodal Officer, Dept. SSAC, ANGRAU, AP
27.	Dr. Manish C. Kasture	Head & Nodal Officer, Dept. of SSAC, Dr.BSKKV, Dapoli
28	Dr. Hitendra Kumar Rai	Pr. Scientist, Dept of SSAC, JNKVV, Jabalpur
29	Dr. Satish Ayyappan	Professor & Nodal Officer, GKVK, UAS, Bangaluru
30	Dr. B. R. Jagadeesh	Professor & Nodal Officer, Dept of Soil Science, UAS, Dharwad
31	Dr. R. N. Katkar	Professor & Head, Nodal Officer, Dr. PDKV, Akola
32	Dr. B B Vashishit	Professor & Head & Nodal Officer, PAU, Ludhiana
33	Dr. Rakesh Banwasi	Assoc. Professor & Nodal Officer, SSAC, CoA, IGKV, Raipur
34	Dr. K K Sharma	Professor & Nodal Officer, SAU, Jobner, Rajasthan
35.	Dr. K.G. Patel	Professor & Nodal Officer, NAU, Navsari
36.	Dr. Sushil Kumar Yadav	Professor & Nodal Officer, ANDUAT, Ayodhya
37.	Dr. Shabir Bangroo	Professor & Nodal Officer, SKUSAT, Srinagar