

## List of in-house, external and contractual projects

### Approved on-going projects

#### Programme I: Soil Health and Input Use Efficiency

##### (A) Institute in-house projects

- 1 Long-term evaluation of integrated plant nutrient supply modules for sustainable productivity in Vertisol.  
Muneshwar Singh, A. K. Biswas, B. P. Meena, A. B. Singh, R. S. Chaudhary
- 2 Biochar on soil properties and crop performance  
Brij Lal Lakaria, Pramod Jha, A.K. Biswas, K.M. Hati, J. K. Thakur, M. Vassanda Coumar, A. K. Dubey (CIAE), S. Gangil (CIAE)
- 3 Nano-particle delivery and internalization in plant systems for improving nutrient use efficiency  
R. Elanchezhian, A.K. Biswas, Tapan Adhikari, K. Ramesh, S. Kundu, A.K. Shukla K. Raju Kumar (Nishad)
- 4 Evaluating rock phosphates for their suitability for direct application  
Sanjay Srivastava, K Ramesh, A.K. Tripathi, I. Rashmi, P Dey
- 5 Evaluation of modified urea materials and agronomic interventions for enhancing nitrogen use efficiency and sustaining crop productivity  
B.P. Meena, K. Ramesh, Pramod Jha, R. Elanchezhian
- 6 Standardization of foliar feeding of zinc for correcting its deficiency and grain enrichment in wheat  
Pankaj K. Tiwari, A. K. Shukla, R. Elanchezhian, B. P. Meena
- 7 Assessment of important soil properties of India using mid-infrared spectroscopy  
K.M. Hati, M. Mohanty, Pramod Jha, R.S. Chaudhary, N.K. Sinha, J.K. Thakur, M. Vassanda Coumar, Pradip Dey, Muneshwar Singh, A.K. Patra, Javed Rizvi

##### (B) Externally Funded Projects

- 8 Network Project on Organic Farming  
A. B. Singh, K. Ramesh, Brij Lal Lakaria, S. Ramana, J.K. Thakur
- 9 (a) Use of nano sensors network for field detection of temperature and moisture stress in plant and soil  
Tapan Adhikari, S. Kundu, C.D. Singh, Ajay, N.K. Sinha, A.K. Patra, Navkanta Bhat, K.S. Subramaniam and Bajendra  
  
(b) Conversion of naturally occurring plant nutrient containing minerals into nano form by top down approach to enhance the availability of plant nutrients in soil and faster reclamation of problem soils

Tapan Adhikari, S. Kundu, A.K. Shukla, K. Ramesh, S. Bhattacharjya, J.K. Saha, A.K. Patra

- 10 Soil quality assessment and developing indices for major soil and production regions of India funded by ICAR-Extra Mural Project  
N.K. Lenka, A.K. Biswas, Rajendiran S., S. Kundu, Sangeeta Lenka, N.K. Sinha, A.O. Shirale, A.K. Viswakarma, R.H. Wanjari, B.L. Lakaria, B.P. Meena, A.B. Singh, A.K. Patra, Muneshwar Singh, D.L.N. Rao, A.K. Shukla, Pradip Dey
  - 11 Ensuring food security, sustainability and soil health through resource conservation based farmer FIRST approach in central India  
A.K. Vishwakarma, R.K. Singh, A.B. Singh, B.L. Lakaria, R.H. Wanjari, K. Bharati, Asha Sahu, Shinogi K.C. and A.O. Shirale
- (C) Collaborative projects with other institutes where IISS scientists are associated in**
- 12 Enhancing Resource Use Efficiency in Pulse Based Cropping System in Central India. Collaborating with ICAR-Indian Institute of Pulses Research, Kanpur (U.P.)  
R. Elanchezhian and A.O. Shirale

## **Programme II: Conservation Agriculture and Carbon Sequestration vis-à-vis Climate Change**

### **(A) Institute Projects**

- 13 Assessing greenhouse gas emission and soil carbon storage with reversal in tillage practice  
Sangeeta Lenka, N. K. Lenka, Sonalika Sahoo, S. Bhattacharjya

### **(B) Externally Funded Projects**

- 14 CRP-Conservation Agriculture  
Development, refinement and validation of conservation agriculture in Vertisols of central India and quantifying impact of CA practices on soil and environment”  
LCPC: Dr. A.K. Biswas and Dy LCPC: Dr. R.S. Chaudhary, K M Hati (PPI), J Somasundaram, A.K. Vishwakarma, Sanjay Srivastava, Pramod Jha
- 15 Simulating the effect of elevated CO<sub>2</sub> and temperature on water productivity and nutrient use in soybean-wheat cropping system  
N.K. Lenka, Sangeeta Lenka, A.K. Shukla, R. Elanchezhian, J.K. Thakur, I. Rashmi and Pradip Dey, P. Chandra (CIAE), K.K. Singh (IMD, New Delhi)
- 16 Integrated assessment of soil and crops for enhancing productivity and C-sequestration potential of Vertisols of central India under changing climate scenarios (NICRA)  
M. Mohanty, Pramod Jha, Sangeeta Lenka, J. Somasundaram, N.K. Sinha, R.S. Chaudhary and Muneshwar Singh
- 17 Hyper-spectral remote sensing approaches to evaluate soil quality and crop productivity of central India (under DST sponsored Network Project on Hyper-spectral Big Data Analytics)  
M. Mohanty, N.K. Sinha, K.M. Hati, R.K. Singh, Pradip Dey, R.S. Chaudhary, A.K. Patra and Bharat Bhaskar Gaikwad

### **Programme III – Soil Microbial Diversity and Biotechnology**

#### **(A) Institute Projects**

- 18 Long term effects of fertilizer and manure amendments on soil functional diversity and nutrient supplying capacity under different soils and cropping systems  
S. Bhattacharjya, Asha Sahu, M.C. Manna

#### **(B) Externally Funded Projects**

- 19 Biodegradation of pesticides under changing climate and metagenomic profiling of functional microbes (DBT)  
K. Bharati, Neera Singh (IARI, New Delhi), T. K. Radha, S. R. Mohanty
- 20 Archaea and Actinobacteria in Vertisols of Central India-Assessment of Diversity, Biogeochemical Processes and Bioinoculant Potential (Funded by AMAAS)  
S.R. Mohanty, K. Bharati and D.L.N. Rao
- 21 Metagenomic mapping of microbial diversity in rhizosphere of major crops of India and Argentina offsetting production potential  
S.R. Mohanty, A.K. Patra, K. Bharati, Muneshwar Singh, J.K. Thakur
- 22 In-situ residue decomposition of rice-wheat and sugarcane for enhancing crop productivity and soil health funded by ICAR-Extra Mural Project  
M.C. Manna, Asha Sahu, R.C. Singh, Jyoti Thakur, Asit Mandal, S. Bhattacharjya, A.K. Tripathi, A.K. Patra, D.H. Phalke
- 23 India-UK nitrogen Fixation Centre (IUNFC)  
S.R. Mohanty, GN Kumar (Baroda), AK. Saxena (Mau), MD Gupta (Kolkata), K. Annapurna (New Delhi), P.M. Ready (New Delhi), Dixon (Norwich), Vinoy Ramchandran (Oxford), DLN Rao

#### **(C) Collaborative projects with other institutes where IISS scientists are associated in**

- 24 Isolation and characterization of heavy metal resistant bacteria & evaluation for their use in agriculture. Collaborating with NBAIM, Mau (U.P.)  
M.C. Manna, Asit Mandal, Asha Sahu, J.K. Thakur

### **Programme IV: Soil Pollution, Remediation and Environmental Security**

#### **(A) Institute Project**

- 25 Interaction among tannery effluents constituents on heavy metals uptake by spinach.  
M. L. Dotaniya, J. K. Saha Rajendiran S., M. Vassanda Coumar S. Kundu

- 26 Determination of Baseline Concentration for Delineating Contaminated Areas in Black Soils of Central India  
M. L. Dotaniya, Rajendiran S., J.K. Saha, S. Kundu, Hironmoy Das (On study leave)
- 27 Assessment of Cotton for the remediation of soils contaminated with heavy metals  
S. Ramana, A.K. Tripathi, K. Bharati, Asha Sahu
- 28 Critical limits of Cd for major soil orders of India  
M. Vassanda Coumar, Rajendiran S., M.L. Dotaniya, J.K. Saha, Tapan Adhikari, Ajay, S. Bhattacharjya
- 29 Management of Municipal Solid Waste (MSW) contaminated landfill area of Bhanpur, Bhopal  
Ajay, Tapan Adhikari, K. Bharati, Asit Mandal and J.K. Saha

**(B) Externally Funded Projects**

- 30 Determination of critical limits for identifying heavy metals contamination and their threats in major soil types of India funded by ICAR-Extra Mural Project  
J.K. Saha, M. Vassanda Coumar, Rajendiran S., M.L. Dotaniya, N.S. Bhogal
- 31 Reclamation and rehabilitation of copper mining affected land in Malanjkhand area of Madhya Pradesh (Hindustan Copper Limited)  
Ajay, Tapan Adhikari, Asit Mandal J.K. Saha

**(C) Contractual Projects**

- 32 Evaluation of efficacy of sulphur and zinc containing complex fertilizers for maximizing yield through balanced nutrition of different crops in India (Zuari Agro Chemicals Ltd)  
A.K. Shukla, A.K. Biswas, Sanjay Srivastava, Pankaj K. Tiwari, B.P. Meena
- 33 Evaluation of efficacy of zinc metalosate and boron metalosate foliar supplements for maximizing yield through balanced nutrition of important crops grown in India (Indofil Ind. Limited)  
A.K. Shukla, A.K. Biswas, Pankaj K. Tiwari, B.P. Meena
- 34 Response of crop to applied Potassium in Vertisols of India. (Sponsored project by PRII, Gurgoan)  
Muneshwar Singh, R.H. Wanjari, B.L. Lakaria, A.O. Shirale
- 35 The "Aquasorb" project Effect of aquasorb on water and nutrient use efficiency & crop productivity of soybean & tomato in selected soils of India (Funded by SNF India Pvt. Ltd. Vishakhapatnam)  
R.S. Chaudhary, R.K. Singh, K.M. Hati, B.P. Meena, A.K. Biswas, M. Mohanty, A.K. Patra and Sonalika Sahoo
- 36 Effect of slow N release formulations for enhancing productivity and nitrogen use efficiency in cereals sponsored by Rhodia Specialty Chemicals India limited, Mumbai  
B.L. Lakaria, Pramod Jha, Sanjay Srivastava, A.K. Vishwakarma, A.K. Biswas and A.K. Patra
- 37 Evaluation of Soil Test Kit of Warkem, Mumbai  
Sanjay Srivastava, Pramod Jha, A.O. Shirale, M. Vassanda Coumar, Gurav Priya Pandurang, A.K. Biswas, Pradip Dey and A.K. Patra

- 38 Impact of viscose staple fibre industry treated effluent on soil health and crop production surroundings Nagda, M.P funded by M/s Grasim Industries Limited, Nagda, Ujjain, M.P.  
M.L. Dotaniya, J.K. Saha, Tapan Adhikari, Rajendiran S., R.H. Wanjari, Sonalika Sahoo and A.K. Patra

### **New Proposals**

#### **(a) Institute project**

- 39 Evaluation of Glauconite as source of potassium for crops  
A.O. Shirale, Gurav Priya Pandurang, Sanjay Srivastava, BP Meena and A.K. Biswas
- 40 Enhancing the productivity of major crops through improving the natural resource base of tribal inhabited areas of central India  
Shinogi K.C., Sanjay Srivastava, A.L. Kamble, B.P. Meena, N.K. Sinha, K. Bharati, Gurav Priya Pandurang, A.K. Tripathi, R.L. Raut (KVK, Balaghat), Rameshwar Ahirwar (KVK, Balaghat), Aparna Jaiswal (COA, Balaghat)

#### **(b) External funded**

- 41 Development of an automated soil nutrient sensing system funded by NASF  
Sanjay Srivastav, A.O. Shirale, P.S. Tiwari (ICAR-CIAE, Bhopal), Vijay Kumar (ICAR-CIAE, Bhopal), Ramesh Kumar Sahani (ICAR-CIAE, Bhopal), Baban Kumar (CSIR-CSIO, Chandigarh) and Neelam (CSIR-CSIO, Chandigarh)
- 42 Vulnerability and impact assessment of climate change on soil and crop production in Madhya Pradesh (Funding Agency:UNDP-GEF-MOEFCC)  
Sangeeta Lenka, N. K. Lenka, M. Mohanty, R. H. Wanjari and A. K. Patra
- 43 Exploring soil microbial community and mechanism in soil carbon sequestration under long term land uses in semi-arid sub-humid Central India funded by SERB, DST  
S. Bhattacharjya
- 44 Use of fly ash in agriculture for sustainable crop protection and environmental protection funded by NTPC  
J.K. Saha, M. Vassanda Coumar, Sonalika Sahoo, A.K. Patra, Tapan Adhikari, Ajay, K.M. Hati, M.L. Dotaniya, Sangeeta Lenka, Asit Mandal, A.K. Vishwakarma