

P-1 : Water Erosion Appraisal in Different Agro-Ecological Regions**1.1: Inventory and Database of Erosion Status Using Modern Tools and Procedures**

1. Development of intensity-duration-frequency curves using rainfall data for different agro-ecological regions of India.
2. Assessment of soil erosion fluxes of Uttarakhand.
3. Impact of land use land cover changes on soil erosion susceptibility in Bundelkhand region using Remote Sensing and GIS technique.
4. Mapping and characterization of Jhola land areas in Koraput districts.
5. Developing methodological framework for delineating and characterization of Chambal and Yamuna ravines.

1.2: Soil Erosion Process Modeling and Climate Change Studies

6. National Mission on Sustaining Himalayan Ecosystem (NMSHE) - Task force on Himalayan agriculture for lower and middle Himalayan region.
7. Application of dynamic simulation models to establish erosion-productivity relationships and soil organic carbon sequestration potential for a future changing climate.
8. Effect of climate change on hydrology of small watersheds vis-à-vis soil and water conservation measures.
9. Application of integrated spatial science tools for prediction of soil erosion map under changing climate scenario for the Uttarakhand state.

1.3: Soil Carbon Dynamics and Erosion Productivity Studies

10. Erosion-productivity relationships for evaluating vulnerability and resiliency of soils under different agro-climatic regions of India.
11. Environmental tracer based study on erosion induced loss of soil organic carbon and its impact on agronomic productivity and environmental quality.
12. Assessment of soil organic carbon in transit under erosion processes: A source or sink for atmospheric CO₂.
13. Development and validation of a spatially explicit simulation framework to quantify runoff-erosion-carbon flux at watershed scale.
14. Effect of slope and land uses on soil carbon stock and soil quality in the Nilgiris.

P-2: Conservation Measures for Sustainable Production Systems**2.1: Resource Conservation Measures for Arable Lands**

15. Evaluating productivity potential of bhimal (*Grewia optiva*) along with field crops.
16. Productivity enhancement in fruit and flower based two tier horticulture system through integrated nutrient management and mulching.
17. Evaluation of organic farming vis-à-vis inorganic farming for resource conservation and sustained productivity under prominent cropping system.
18. Performance of Tamarind near S&WC structures with different mulches in vertisols of SAT region.
19. Evaluating the effect of organic amendments on resource conservation and productivity of rainfed semi-arid vertisols.
20. Conservation tillage for resource management and higher production from Shiwaliks.
21. Adoption potential and productivity of organic vis-à-vis conventional farming system under rainfed conditions of Shiwaliks region.
22. In situ moisture conservation practices under aonla based agro-forestry system for sustainable production in red soils of Bundelkhand.
23. Restoration of shifting cultivated lands for resource conservation and sustainable production in Eastern Ghats.

24. Development of conservation agriculture practices for rainfed production systems in different agro-ecological regions of India.
25. Cover crops and reduced tillage for enhancing productivity and soil health in rainfed farming system in the hilly areas.
26. High value forage grass strips for resource conservation and enhancing production in crop fields.
- 2.2: Resource Conservation Measures for Non-Arable Lands
27. Enhancement of guava productivity through canopy management and mulching in rainfed bouldery riverbed lands.
28. Evaluation of traditional minor millet based agro-forestry systems under recommended agri-silvicultural practices of North-Western Himalayas.
29. Effect of degradation on conservation and production attributes of Sal forests in Uttarakhand.
30. Influence of aromatic grasses and tree management on soil moisture and health under silvo-aromatic grass systems on bouldery land of Doon Valley.
31. Efficacy of different soil and water conservation measures on bamboo productivity and resource conservation in Himalayan foothills.
32. Canopy management in *Morus alba* for enhancing productivity and resource conservation.
33. Development and characterization of quality planting material of important MPT's for degraded lands of North-West Himalayas.
34. Evaluation of Bael and Olive based agro-forestry system with soil amendments in Doon Valley.
35. Phyto-rehabilitation of saline - sodic vertisols through *Prosopis juliflora* based silvipastoral system.
36. Peach based agri-horticulture land use system for degraded Shiwaliks.
37. Resource budgeting in agro-forestry for livelihood security by modifying WANuLCAS model under Indian condition.
38. Evaluation of moisture conservation techniques for sustainable production of Tree Borne Oil Seeds (TBOS) in Bundelkhand.
39. Evaluation of promising fruit species with different moisture conservation practices in red soils of Bundelkhand region.
40. Evaluation of cover crops under cashew and mango plantation for improving soil health and productivity in Eastern Ghats High Land Region of Odisha.
41. Evaluation of different underutilized fruit species with varying inter-space managements in Chambal ravines.
42. Evaluation of promising oilseed tree species under silvi-pastoral system for rehabilitation of Chambal ravines.
43. Evaluation of carbon sequestration potential of different tree based production systems in South-eastern Rajasthan.
44. Effect of shade trees on productivity and soil health in rejuvenated tea plantations in Nilgiris.

P-3: Watershed Hydrological for Conservation Planning

3.1: Hydrological Behaviour of Landuses and Management Practices

45. Hydrological evaluation of recommended forest trees in Himalayan foothills.
46. Evaluation of hydrological behaviour and production potential of recommended landuse system / practices under different agro-ecological regions of India.
47. Hydrologic systems analysis across multiple spatial scales and its implications on hydrologic processes in sub-humid catchment of Eastern Ghat High Land Region of Odisha.
48. Modelling the nutrient movement in agricultural watersheds and their impact on surface water resources of Nilgiris.
49. Hydrological implication of sequential alternation of land use covers in a ravinous catchment.

3.2: Water Harvesting, Groundwater Recharge and Management

50. Development and rejuvenation of natural springs through soil and water conservation measures.

51. Water quality assessment and its impact on adjacent soil and vegetation in riparian areas of Hindon and Kali rivers.
52. Consortia Research Platform-Water Theme 1 Water Resources Augmentation/Conservation.
53. Conservation Bench Terrace (CBT) based integrated farming system in Himalayan foothills.
54. Efficient groundwater management for enhancing adaptive capacity to climate change in sugarcane based farming systems in Muzaffarnagar district, U.P.
55. Water budgeting of a ravine watershed pond for optimum crop planning under semi-arid region.
56. Study on pollution status of Yamuna river and its impact on soil and crop health in Western U.P.
57. Socio-economic implication and vulnerability of farmers to ground water exploitation in hard rock region of the Deccan.
58. Developing SALT (Sloping Agricultural Land Technology) for resource conservation and economic upliftment in Shiwaliks.
59. Estimation of water budget components for predominant land uses of south-eastern Rajasthan for conservation planning.
60. Enhancement in land productivity and livelihood security of small farmers of Nilgiris through multiple use of harvested water.
61. Development of efficient and innovative blue and green water harvesting techniques for enhancing the land and water productivity of semi-arid districts of Gujarat.
62. Strategies for rainwater harvesting and its multiple uses in rainfed agriculture in Central Gujarat.

3.3: *Decision Support Systems (DSS)*

63. Development of a user friendly Decision Support System application for planning of watershed development project.

P-4: *Rehabilitation of Areas Affected by Mass Erosion*

- 4.1: Development and Refinement of Technologies for Rehabilitation of Ravines, Landslides, Mine spoils, Riverbed Mining, Stream Banks, Torrents etc.
64. Assessment of impact of extraction of RBM (River bed material) on physiography of stream flow courses of Himalayan foot hill streams.
65. Ecological restoration of stone mine spoil area in south-eastern Rajasthan.
66. Prototype field study on application of potentially important jute geo-textiles for hill slope stabilization.
67. Field evaluation of design of trenches under different agro-climatic regions.
68. Enhancing productivity of ravine lands by plantation of A. sapota with intercropping systems.

P-5: *Integrated Watershed Management for Socio-Economic Growth and Policy Advocacy*

5.1: *Participatory Watershed Management and Integrated Farming System (IFS)*

69. Multiple criteria decision for identifying suitable Integrated Farming Systems in different agro-ecological regions for optimizing resource conservation and productivity.
70. Evaluation of criteria and techniques for classification of fisheries – sensitive watersheds for conservation and production management.
71. Socio-economic analysis of tribal farming system in different topo-sequence in Koraput District, Odisha.

P-6: *Human Resource Development and Technology Transfer*

6.1 *Capacity Development Approaches and Information and Communication Technology (ICT)*

72. Developing ICT based elearning tools for conservation measures and watershed management.
- 6.2: Participatory Technology Dissemination and Adoption
73. Role of soil and water conservation technologies for climate resilient agriculture in Himalayan ecosystem – An action research.
74. Documentation and validation of ITKs in soil and water conservation practiced by tribal farmers of Tamil Nadu.
75. Ensuing sustainable agricultural development and livelihood security in lower Shiwalik range of Uttarakhand.