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भा.कृ.अनु.प.-भारतीय मृदा एवं जल संरक्षण संस्थान

संस्थान अनुसंधान समिति कार्यवृत्त-2021

ICAR - IISWC

ISO 9001 : 2015

INSTITUTE RESEARCH COMMITTEE PROCEEDINGS - 2022

(4th-9th July 2022 and on 27th Aug. 2022)

प्राथमिकीकरण, अनुवीक्षण एवं मूल्यांकन प्रकोश्ठ

PRIORITIZATION, MONITORING & EVALUATION CELL

भा.कृ.अनु.प. – भारतीय मृदा एवं जल संरक्षण संस्थान
218, कौलागढ़ रोड़, देहरादून (उत्तराखण्ड)

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CONTENTS

PREAMBLE BY THE IRC CHAIRMAN

Dr M. Madhu, Director, ICAR-IISWC and Chairman, the Institute Research Committee (IRC-2022) appreciate the achievements made in individual projects. The scientists of the IISWC have high potential in mobilizing resources and opportunities for the cause of R&D on NRM. I congratulate the scientists for taking up externally funded projects and also request to promote the culture of bringing externally funded projects which would strengthen the research infrastructure in different Divisions/Centres.

The standard protocol for various themes of research projects such as watershed hydrology and conservation engineering, tillage and conservation agronomy, conservation forestry and horticulture and livelihood related projects, specifying mandatory parameters/observations, and approaches are to be followed. Engaging in need-based research and outreach activities are to be prioritized, especially under TSP and SCSP programmes.

It is utmost required to come out with the strategies by all the Scientists for developing long-term experiments and also monitoring of data from established watersheds, research projects including plantation/orchards etc. Effective utilization of technical and project staff for data monitoring is must for enhancing their skills as well as progress. Each technical staff should have at least one project for collecting various soil/land/runoff data so that their capability can be improved. Strong reviewing mechanism during STMIM is required to have a record and tracking of each activity of Scientists and technical staff. The need of standard portable systems for runoff and soil loss monitoring and standard protocol of the experiment need attention.

Documentation and creation of experimental/research databases is a critical need. While the efforts and achievements of the scientists are appreciated, time management, and effective mentoring and guiding the research team by the senior members of the IRC besides mutual appreciation of the efforts and success of colleagues would ensure progress together.

(M Madhu)

EDITORIAL

The IRC-2022 meeting of ICAR-IISWC was conducted online during 4th-9th July 2022 and on 27th Aug. 2022. The meeting was chaired by Dr M Madhu, Director, ICAR-IISWC and Chairman, IRC-2022 and began with welcome address by the Member Secretary, IRC-2022, Dr M Muruganandam, Principal Scientist and OIC PME Cell. Subsequently, the meeting proceeded with the opening remakes of the Chairman and presentations and discussions on projects under different Themes, other mandated activities and new project proposals. All the Scientists including program/theme leaders, Head of Divisions/Research Centers who are the members of IRC, besides the invited external evaluators participated in the meeting.

The scientists of the Institute presented and discussed on 61 ongoing research projects including in-house, multi-locational core projects, externally funded and collaborative projects covered under 6 research Themes. A total of 8 projects concluded during the year were discussed and 19 new projects including 8 externally funded projects and 2 core projects have been approved and discussed. Series of Pre-IRC meetings and workshops on various research proposals/projects conducted by all the Theme Leaders ultimately improved the outcome of the IRC-2022 meeting and its proceedings.

This year, as an improvement, the Programme/Theme Leaders conducted the technical and scientific discussions on various research projects under respective theme, which improved time management and outcome of the meeting. The evaluation of research projects objectively based on pre-decided attributes, weights and scoring approach improved the critical evaluation of the projects discussed.

During the meeting various assignments entrusted to various scientists were discussed specifying action taken, accomplishments and way forward. New set of action points and assignments were also emerged during the meeting. Presentations from different functional units of the Institute like PME Cell, and Technology Demonstration Unit underlined the significant achievements of the respective units. Also, the scientists' achievements in terms of quality research papers, other knowledge products developed, awards/recognitions received etc. were acknowledged and appreciated by all the members of the IRC-2022 during the meeting.

This IRC-2022 proceedings includes a comprehensive blue print for the action points of various research projects covering salient achievements, recommendations, and way-forward as evolved and deliberated during the meeting. It contains a plan of action for the ongoing projects and future years besides the progress of previous years as assessed, and discussed. Overall, the IRC-2022 was successful in all its perspectives.

Editors

ACKNOWLEDGEMENT

The success of the IRC Meeting-2022 would not have been possible without the active participation of all the scientists/members of the IRC meeting and esteemed invited external expert evaluators. The guidance of Dr M. Madhu, Director and Chairman, IRC-2022 IISWC improved the entire proceedings of the IRC-2022.

The contributions of Dr SS Grewal, Er KP Tripathi, Dr RK Singh, and Dr RP Yadav, external expert evaluators who evaluated the projects really helped in objective evaluation and grading of the projects discussed. Program/Theme Leaders, Head of Divisions or Centres and the PI of all the projects are sincerely acknowledged for their active participation and deliberation in assessment of the scientific progress and achievements, on which this proceedings have been brought out.

The Chairman of the IRC-2022 and all the members of the IRC-2022 meeting sincerely thank the research collaborators and funding agencies including DST, DBT, NABARD, ISRO, IIRS and MSSRF. Dr Rengalakshmi, Director, MSSRF, Thrivannamalai district, Tamilnadu is appreciated for joining the online meeting with reference to one of the research proposals.

All the PME Cell staff and coordinators of various committees of the IRC-2022 meeting are sincerely thanked for the positive contribution towards successful completion the meeting. Er SS Shrimali, Sr Scientist and Er Amit Kumar Chauhan, STO and other Staffs of the AKMU Cell are acknowledged for the smooth conductance of the online IRC proceedings. The PME Cell extends sincere thanks to the refreshment committee at Dehradun, Dr JMS Tomar, Principal Scientist (Forestry) and his team for their sincere service.

Editors

1.0 NEW INITIATIVES EFFECTED SINCE THE IRC-2021

- Introduced pre-IRC workshops/deliberations coordinated by the respective Program Leaders and cognitions of the Program Leaders, and Members of PME Cell taken on the conductance of the IRC.
- All the project were listed and discussed Theme-wise, from Theme 1 to 6 in order to simplify the listings, evaluation and compilation of the proceedings.
- Theme-wise summation of presentation and gap identification was incorporated at the end of presentations of projects under each Theme.
- The presentation formats and project category-wise specifications/guidelines were expanded for better details, contents, and delivery, with the emphasis on time limit as compared to slide limits.
- Standard power-point (ppt) presentation format was devised and made available to all the Scientists.
- Evaluation by an independent and anonymous External Evaluator was introduced to bring in unbiased evaluation.
- Set of evaluation attributes and parameters and 05 different pre-decided rating scale devised along with score and weightage for project evaluation ranking.
- ICT-based evaluation of project progress by a team of Scientists/Experts including Chairman, of the meeting, Theme Leaders, and the Principal Investigators besides an External Evaluator independently was introduced.
- Use of uniform/standard format of units and terms in presentations and compilation emphasized.
- ICT-based proformae introduced to collect annual progress and other relevant details of the projects for discussion.
- ICT-based attendance and monitoring of the deliberations was a new addition.
- New projects were critically evaluated based on national priorities in phases and acceptance rate was around 30%.
- The prioritized new/extended/core projects were discussed and finalized technical programs through exclusive workshops subsequent to the main IRC program, in phases.
- Reconstitution of the project team in various projects was an emphasis for the effective working and delivery.
- The format of the proceedings was also revised and improvised for comprehensive details to include all the proposals received, approved, pending approvals and unsuccessful proposals.
- The ICT-based approach introduced for collection of information for improvement of the proceedings.
- The proceedings has been brought out in a months' time for early adoption of the recommendations of the Meeting.

2.0 SALIENT RECOMMENDATIONS OF IRC MEETING – 2022

S. No.	Action points	Action taken by	Last date for submission of the report
1	Reviewing of the externally funded project on Half Yearly basis and progress may be reviewed monthly at the Division/ Center level	OIC (PME Cell)	On Half Yearly basis
2	Submission of standalone-master PPT slide for each project.	All PIs of the projects	24.09.2022
3	Submission of one page technical details of each project in word document (as per the format specifies)	All PIs of the projects	24.09.2022
4	Preparation and submission of project report for the concluded project covering all the details of the project including all raw data in Annexure.	All PIs of the concerned projects	30.09.2022
5	Linkages with KVKs for upscaling the technology transfer and training to be established	All Heads of the Centres/Divisions (TSP/SCSP)	ATR to be submitted on regular basis
6	Monitoring at least one premier watershed developed by the Institute and Research Centres through scientific planning and strategies	All Heads of the Centres/Divisions	Continuous report to be submitted
7	Policy brief out of the concluded projects (not more than 2 pages)	All PIs of the concluded projects	30.09.2022
8	Workshop to be organised on standardisation of tillage experiments and parameters to be collected	Dr D Mandal I/c Head (SS&A)/ Dr Raman Jeet Singh	Within 31 Oct. 2022
9	Establishing oil extraction unit from Lemon grass as a start-up activity at Research Farm, Selakui	Dr J.M.S. Tomar, Pr. Sci.	30.09.2022
10	Use uniform standard units as per the format of IJSC, Dehradun	All Scientists at the HQ/Centres	Continuous process
11	Sharing and uploading of photograph with captions for the research project for the current year	All Scientists at the HQ/Centres	31.09.2022
12	Network project on ravines	Dr A.K. Singh, Head, Vasad	23rd Aug. Discussion
13	Technology transfer through TSP/SCSP	All implementing team	To be submitted on regular basis

3.0 SALIENT RECOMMENDATIONS OF PREVIOUS IRC AND ACTION TAKEN

3.1 Action Assigned/Continued and Action Taken

S. No.	Action Assigned	Action Taken/Assigned To
1.	A video film of 5-10 minutes related to each Research Centre may be prepared by respective Head of Research Centre. Further, video film of 2-3 minutes related to specific technology of the Research Centre may also be prepared for the benefit of trainees.	Relevant agency approached. Sample video may be submitted by Sept., 2022. Video preparation may begin from Oct. 2022 onwards (Dr Bankey Bihari and Heads of Centres/Divisions)
2.	A Decision Support System (DSS) for watershed planning, execution and monitoring should be developed as per the recommendations of RAC by March 2021.	Design of check dam finalized. Work in progress. Frequent meeting may be held. (Action: Dr Gopal Kumar, Er SS Shrimali and Dr M Madhu)
3.	Revision of potential soil erosion map	Progressing and work will be completed March, 2023. (Action: Dr Uday Mandal)
4.	Workshop/interface meeting on prioritization of watersheds for fisheries potentials with DCFR, Fisheries state dept., etc.	A webinar on the topic and interaction held with International fisheries professionals of American fisheries society on 23rd May, 2022 and presented to Pantnagar Fisheries college, Pantnagar on 21st May, 2022. A workshop will be organized this year as well. (Action by Dr M Muruganandam by March, 2023)

3.2 Actions Completed During 2022

S. No.	Action Points	Status
1.	Jholakundi based vegetable farming with soil moisture conservation practices for increasing profitability of tribal farmers of Eastern Ghats High Land region. (Action: Ch. J. Dash)	Completed
2.	Workshop on recharge filter (Dr BS Naik, Dr Shakir Ali, Dr Sridhar Patra) (By March,2022)	Completed
3.	Workshop on field plot studies and standard SOPs (Dr S. Manivannan) (By December,2021)	A workshop organized
4.	Recharge pipe: submission of the diagrammatical representation and cross section of the recharge pipe system for horticulture plantation to the Institute (Action: Dr Shakir Ali)	Completed
5.	Analysis of reasons for failure of farm ponds and solutions/alternatives for resolution. (Action: Dr Ravi Dupdal by March,2022)	Completed
6.	Software for design of farm pond under NABARD external funded project (Preferably standalone model**)** (Action: Dr Pankaj Panwar)	Completed
7.	A bulletin on assessment of soil erosion fluxes in Uttarakhand (Assignment continuing from IRC_2020 Action: Dr P.R. Ojasvi)	First draft summited

8.	Map and data of harvestable runoff potential be shared among interested scientists of the Institute for use and validation before sharing in public domain (Action: Dr PR Ojasvi)	Data has been shared in the form of bulletin and on the website.
9.	Organizing interface meeting with the stakeholders – For all the concluded projects during 2020 (Action: By All the PIs By March, 2022).	Kota: An interface meeting with stakeholders has been organized on 27 May, 2022. Ooty: Stakeholders meet on use of cover crops for improving soil health was organized on 5th Dec., 2021. A video film prepared on the technology was showed to the farmers and other officers in line department.
10.	Catchment-storage-command area relationship from the already implemented in the farmers' field at Odisha and Karnataka. (Action: Dr Ravi Dupdal; Dr DC Sahoo)	Dr DC Sahoo, RC, Koraput visited 15 to 20 numbers of water harvesting ponds constructed in the farmers' field by state department. Based on command area available by the farmers, the storage area of the pond decided with fixed depth.
11.	Workshop on soft-skills/standard analytical procedures/calculation of energy use efficiency, water use efficiency, benefit-cost analysis, system analysis (main-crop equivalent yield), and other agronomic terms/analysis (Action: Dr P Dogra, Dr Raman Jeet Singh: By December,2021)	H&E Division: workshop has held on "Water Used Efficiency and Water Productivity" by Dr S Patra on March 26, 2022. SS&A Division: Completed and report submitted.
12.	Action is again assigned by the IRC – 2020 that the document of 60/30 years' research in Soil and Water Conservation may be published by the Head, Research Centres Agra, Bellary, Kota and Udhagamandalam on or before December, 2020. (Action: Head, Research Centres Ballari and Datia)	Draft submitted and to be completed in 2022

3.3 GENERAL RECOMMENDATIONS OF IRC-2021 and 2022

A. Scientists Centered

- Scientists should build expertise in a specific area for targeted works.
- Submit externally-funded projects at National & International level: External funding sources like RKVY, DST, DBT, CSIR, NRAA, NFDB, National Horticulture Board, Bamboo Board, etc. should be explored.
- Submit inter-institutional projects and papers to bring in more collaborative outcomes. Relevant Institutions may be collaborated through appropriate MOUs and technical programs.
- Bring out quality publications as per targets committed.
- Relevant policy briefs specifying spatial scales like AER, States, etc. may be brought out.
- Share data/details freely with all requiring and concerned scientists of the Institute and get recognized in all possible ways.
- Videos may be prepared while execution itself using the outreach funded projects.
- Quantify area under different SWC measures implemented and diffused/spread and GWP/climate change impacts quenched.

- The IRC, RAC and such other bodies' recommendations should be executed in letter and spirit.
- Frequent interaction amongst the team members and corrective measures may be applied to improve projects' outcomes.
- Time limit and decorum may be strictly followed in presentations.

B. Projects Centered

- Projects should suitably address problems and issues of larger spatial scale like section of region, States, AERs, or national level though we may work with or use cadastral/district level data for analysis.
- Include set of standard parameters and analysis wherever possible: runoff and soil loss, nutrient loss, carbon stock/build up, CO_2 equivalent/GWP, water use efficiency, energy use efficiency, systems' performance/standard economic analysis (accounting major crop equivalent yields), before and after and with and without impacts etc.
- Critical and additional/objective-based parameters including parameters that reflect Farmer's benefit may be collected and analyzed, even by outsourcing, if required to add value to the project output/publications.
- Uniform terms and units of production, runoff, soil loss etc. and other impact and economic attributes to be used in reports, presentations etc.
- Center-wise RPPs may be submitted for Core projects to engage all participating scientists.

3.4 USEFUL WORKSHOPS/TRAINING PROGRAMS RECOMMENDED

Various workshops and training programs on soft skills and open-source software and toolkits have been suggested and planned to be organized to enhance the functional capacities of all the scientists and technical staff of the Institute. Some are listed below.

S. No.	Title	Responsibility
1.	Workshop/soft skills training on GIS, LULC delineation for all engineers and interested scientists of the Institute/Centres (Dr Uday Mandal and Er Saswat K Kar) By March,2023)	Dr Uday Mandal and Dr Gopal Kumar
2.	Workshop on Models (CROPWAT-crop-water evaporation, SWAT, KINEROS, WEBB etc. by Dec. 2022	Dr Gopal Kumar
3.	Workshop on Hood Infiltrometer, hydraulic conductivity associated soil/SWC attributes and measurements (Dr S Patra) (By March, 2023)	Dr S Patra
4.	Workshop on unification of data/extrapolation of outputs of small-scale studies/observations to larger scale/context with minimum error.(PME cell : By March 2023)	PME cell

3.5 COMMON OBSERVATIONS BY THE EXTERNAL EVALUATORS

- In general presentations have improved over previous years. They were well organized and systematic with appropriate visuals and use of statistical tools. In some presentations, line charts were used for comparing discrete treatments. Scientists need to choose carefully type of chart suited to their data.

- In most cases presentations were limited to reporting of the data without adequate explanation for the observed trends. Also, there were contradictory trends reported in some cases with no convincing justification. Scientists are expected to thoroughly understand their data. If needed additional information / data shall be collected to support proposed justification for unexpected trends.

- In programme 2.1 conservation tillage, use of soil amendments and cropping system evaluation are major research areas. Quality of investigations can be improved through following an area specific standard protocol for collecting field and lab data. Existing suitable models for plant and soil processes quantification can help in identifying research gaps, developing data collection protocols and developing scalable technologies.

- It would be desirable to establish long-term plots for tillage and residue recycling treatments which can be used for short-term experimentation with different cropping system, soil amendments, irrigation requirements and nutrient management.

- In programme 2.2 erosion control, site amelioration and managing plant water stress are major concern in productive utilization of non-arable lands. Accordingly, a data collection protocol needs to be followed targeting quality publication. Data on rooting behavior and leaf water potential (or relative water content) would be helpful.

- Progress of work need to be reviewed against the committed targets for the year against each of the objectives in RPP-1. This may be included in IRC presentation.

4.0 RESEARCH PROGRAMMES AND SUB-PROGRAMMES

The institute addresses various problems of resource degradation, stakeholders and farming communities all over the country through six different Theme areas such as water erosion appraisal in different agro ecological regions, conservation measures for sustainable production system in arable and non-arable lands, watershed hydrology for conservation planning, rehabilitation of areas affected by mass erosion problems, integrated watershed management for socio-economic growth and policy advocacy and human resource development and technology transfer. The themes are monitored by Theme Leaders for the effective implementation and outcome management.

P-1 WATER EROSION APPRAISAL IN DIFFERENT AGRO-ECOLOGICAL REGIONS

(Leader - Er S.S. Shrimali)

1.1 Inventory and database of erosion status using modern tools and procedures
1.2 Soil erosion process modeling and climate change studies
1.3 Soil carbon dynamics and erosion productivity studies

P-2 CONSERVATION MEASURES FOR SUSTAINABLE PRODUCTION SYSTEM

2.1 Resource conservation measures for arable lands

(**Leader - Dr N.K. Sharma)**

2.2 Resource conservation measures for non-arable lands

(Leader - Dr Charan Singh)

P-3 WATERSHED HYDROLOGY FOR CONSERVATION PLANNING

(Leader - Dr S. Patra)

3.1 Hydrological behaviour of land uses and management practices
3.2 Water harvesting, groundwater recharge and management
3.3 Decision support systems (DSS)

P-4 REHABILITATION OF AREAS AFFECTED BY MASS EROSION

(Leader - Dr Shakir Ali)

4.1 Development and refinement of technologies for rehabilitation of ravines, landslides, mine spoils, riverbed mining, stream banks, torrents etc.

P-5 INTEGRATED WATERSHED MANAGEMENT FOR SOCIO-ECONOMIC GROWTH AND POLICY ADVOCACY (Leader - Dr Pradeep Dogra)

5.1 Participatory watershed management and integrated farming system (IFS)
5.2 Common property resource management

P-6 HUMAN RESOURCE DEVELOPMENT AND TECHNOLOGY TRANSFER

(Leader - Dr Bankey Bihari)

6.1 Capacity development approaches and information and communication technology (ICT)
6.2 Participatory technology dissemination and adoption

5.0 AGENDA, PROGRAMME AND GUIDELEINES OF IRC MEETING, 2022

5.1 AGENDA & PROGRAMME (4.7.2022 to 9.7.2022)

DATE (Day)	TIME	AGENDA & PROGRAMME
04.07.2022 (Monday)	**10:00 AM**	Welcome by Dr M Muruganandam, Member Secretary, IRC_2022 and the OIC (PME Cell)
	10:05 AM	**Opening and Introductory Remarks** - Dr M. Madhu, Director & Chairman, IRC-2022
	10:30AM	**P-1 Water Erosion Appraisal in Different Agro-Ecological Regions (Total: 10 Projects, S. No: 1 to 10)** **Presentation of Programme-1.1 by the Project Leaders** S. No. 1-Soil erosion--------- NW Himalaya: Dr M Sankar (Continued) **Presentation of Programme-1.2 by the Project Leaders** S. No.2- Study------ assessment : Dr P. Raja (Externally Funded) S. No.3- Assessment----- India : Dr Uday Mandal (Concluded) S. No.4- Development------watershed : Dr Sadikul Islam (Continued) S. No.5- Development-------equation : Dr Sadikul Islam (Continued) **Presentation of Programme-1.3 by the Project Leaders** S. No. 6- Erosion------- India : Dr D. Mandal (Core) S. No. 7- Assessment------CO_2 : Dr M. Shankar (Collaborative) S. No.8 - Environmental----quality : Dr D. Mandal (Externally Funded) S. No.9- Land--------tropics : Dr D. Dinesh (Collaborative) S. No.10- Carbon -------- India : Dr Gopal Kumar (Core) **Summing Up/Discussion on Research Area Gap/New Ideas in P-1 (10 min.)**
	1:40 PM	**LUNCH BREAK**
	2:30 PM	**P-2 Conservation Measures for Sustainable Production System (Total: 29 Projects, S. No: 11 to 39)** **Presentation of Programme-2.1 by the Project Leaders** S. No.11- Restoration ------- Ghats : Dr D.C. Sahoo (Continued) S. No.12- Development----region : Dr N.K. Sharma (Continued) S. No.13- Evaluation------lands : Dr Ramanjeet Singh (Continued) S. No.14- Determining----profitability : Dr Lakh Chand (Concluded) S. No.15- Utilization------management : Dr Trisha Roy (Concluded) S. No.16- Effect------ South India : Dr M.N. Ramesha(Collaborative) S. No.17- Efficient ----------system : Dr Ram Prasad (Continued) S. No.18- Soil ----------mulching : Dr Lekh Chand (Continued) S. No.19- Biochar-------ecosystem : Dr K. Rajan (Externally Funded) S. No.20- Evaluation ------Himalaya : Dr DevideenYadav (Continued) S. No.21- Sustaining ----Rajasthan : Dr Kuldeep Kumar (Continued) S. No.22- Development---- Gujarat : Dr D Dinesh (Continued) S. No.23- Evaluating------- system : Dr Ram A. Jat (Continued)
05.07.2022 (Tuesday)	**10:00 AM**	**Presentation of Programme-2.2 by the Project Leaders** S. No.24- Evaluation ---- Valley : Dr J. Jayaprakash (Continued) S. No.25- Improvisation-----Himalayas : Dr D.V. Singh (Continued) S. No.26- Upscaling----Uttarakhand : Dr Rajesh Kaushal **(**Externally Funded**)** S. No.27- Evaluation ------regions : Dr S. Kala (Concluded) S. No.28- Resource ----------Gujarat : Dr Dinesh Jinger (Continued) S. No.29- Assessment ------Himalayas : Dr A.C. Rathore (Continued) S. No.30- Regulated ---------vertisols : Dr M. Prabhavathi (Continued) S. No.31- Microsite--------- lands : Dr Rajesh Kaushal (Continued) S. No.32- Evaluation---------Rajasthan : Dr H.R. Meena (Continued) S. No.33- Evaluation------ system : Dr JotirmayeeLenka (Continued)

		S. No.34- Fruit ----------region : Dr Ram Prasad (Continued) S. No.35 - Restoration ---------India : Dr Sharmistha Pal (Continued) S. No.36- Ecological-------region : Dr D. V. Singh (Collaborative) S. No.37- Identification------- land : Dr Rajesh Kaushal (Externally Funded) S. No.38- Cultivation------- region : Dr J.M.S. Tomar (Collaborative) S. No.39- Performance------ lands : Dr A.C. Rathore (Continued) **Summing Up/Discussion on Research Area Gap/New Ideas in P-2 (10 min.)**
	1:00 PM	**LUNCH BREAK**
	2:00 PM	**P-3 Watershed Hydrology for Conservation Planning (Total: 10 Projects, S.No 40 to 49)** **Presentation of Programme-3.1 by the Project Leaders** S. No.40- Hydrologic -------Odisha : Dr Ch. J. Dash (Concluded) S. No.41- Enhancing------water : Dr P. R. Ojasvi (Externally Funded) S. No.42- Evaluation ------systems : Dr D. C. Sahoo (Continued) S. No.43- Effects -------Himalayas : Dr S. Patra (Continued) S.No.44- Partitioning----Tamil Nadu : Dr P Raja (Externally Funded)
	3:20 PM	**Presentation of Programme-3.2 by the Project Leaders** S.No.45- Development-----measures : Dr Charan Singh (Collaborative) S. No.46- Employing---- hill region : Dr P.R. Ojasvi (Continued) S. No.47- Evaluation---- Karnataka : Dr B.S. Naik (Continued) S. No.48 - Modelling ---------- GIS : Dr Manoj Kumar (Continued) S. No.49- Developing------Punjab : Dr Pankaj Panwar (Externally Funded) **Summing Up/Discussion on Research Area Gap/New Ideas in P-3 (10 min.)**
06.07.2022 (Wednesday)	**11:00 AM- 1:00PM**	A seminar on "Food-Energy-Water Nexus" jointly organized by IASWC and ICAR-IISWC, Dehradun in hybrid mode. Speaker: Dr. Vijay P. Singh, Distinguished professor, Texas A & M University, USA.
LUNCH		
	2:00 PM	**P-4 Rehabilitation of Areas Affected by Mass Erosion (Total: 3 Projects, S. No 50-52)** **Presentation of Programme-4.1 by the Project Leaders** S. No.50- Enhancing -------- systems : Dr Gaurav Singh (Continued) S. No.51- Ecological ------- Rajasthan : Dr B.L. Mina (Continued) S.No.52- Impact------ Environment : Dr Gulshan Kr. Sharma (Continued) **Summing Up/Discussion on Research Area Gap/New Ideas in P-4 (10 min.)**
		P-5 Integrated Watershed Management for Socio-Economic… Advocacy (Total: 3 Projects, S.No.53-55) **Presentation of Programme-5.1 by the Project Leaders** S. No.53- Economic -------- Karnataka : Dr Ravi Dupdal (Continued) S. No.54- Valuation-----India : Dr Pradeep Dogra (Core) S. No.55- Resource -------- approach : Dr J.M.S. Tomar (Continued) **Summing Up/Discussion on Research Area Gap/New Ideas in P-5 (10 min.)**
	3:40PM	**P-6 Human Resource Development and Technology Transfer (Total 6 Projects, S.No 56-61)** **Presentation of Programme-6.1 by the Project Leaders** S. No.56- Impact-------- analysis : Dr Ravi K.N.(Continued) S. No.57- Assessment------- Odisha : Dr Ch. J. Dash (Externally Funded) **Presentation of Programme-6.2 by the Project Leaders** S. No.58- Farmer------Himalayas : Dr Bankey Bihari (Externally Funded) S. No.59- Establishment---Hills : Dr D. C. Sahoo (Externally Funded)
07.07.2022(Thursday)----------Day off----------		

08.07.2022 (Friday)	**10:00AM**	S. No.60- Upscaling--------Odisha : Dr Ch. J. Dash (Externally Funded) S.No.61- Impact------- India : Dr Indu Rawat (Collaborative) **Summing Up/Discussion on Research Area Gap/New Ideas in P-6 (10 min.)** **Projects discussed and approved in IRC-2021 (Total 3 projects S. No. 62-64)** S.No.62-Evaluation of ---------- Bundelkhand region : Dr Dinesh Kumar S.No.63-Evaluation of---------- under CBT : Dr Sridhar Patra S.No.64- Evaluation of ----------NW Himalayas : Dr Charan Singh **Projects to be considered when collaborating / Funding agencies finalized (Total 3 Projects, S .No. 65-67)** S.No.65- Impact of---------- rainfall area : Dr S Kumar / Dr SM Vanitha S.No.66- Internet -------ICAR-IISWC, Dehradun : Dr Akshay Dheeraj S.No.67- Development------ semi-arid regions : Dr S Kala **Presentation of Externally funded projects <u>not listed</u> in IRC Proceedings_2021; (Total 4 projects, Sl. No. 68-71)** S.No.68- Comprehensive-------- Odisha : Dr M. Madhu S.No.69- Evaluation------- metabolites : Dr Pankaj Panwar S.No.70- Comparative------ Kota : Dr Shakir Ali S.No.71- Study--------- scenario : Dr P. Raja
LUNCH		
	2:00 PM	**New proposals/projects approved after IRC_2021** S. No.72- Dr Trisha Ray S. No.73- Dr M Kadam S. No. 74- Dr D Dinesh S. No. 75 – Dr S Patra S. No.76- Dr S Manivannan S. No.77- Dr M Muruganandam S. No.78- Dr RK Dubey S. No.79- Dr Deepak Singh **Presentation of Observational Trials (OT, 05 Nos.) listed on Page No. 51 of IRC Proceedings, 2021** S. No. 80-OT 1 Evaluation----------lands : Dr Ram Prasad S. No. 81-OT 2 Sorghum----------Bundelkhand : Dr Dinesh Kumar S. No. 82-OT 3 Re-composting-------- enhancement : Dr S.K. Annepu
09-07-2022 (Saturday)	**10:00 AM**	S. No. 78-OT 4 Development------ lands : Dr Matber Singh S. No. 79- OT5 Phyto-rehabilitation-----system : Dr M. N. Ramesha
	10:30 AM	**Action Taken Report (ATR)**on the assigned in the IRC Meeting, 2021 - Dr M. Muruganandam, OIC PME Cell & Mem. Secretary, IRC_2021
	10:45 AM	Presentation & Discussion on **HRD Outreach and Capacity Building Activities at the Head Quarters and Centers** - Dr D.V. Singh, Principal Scientist, and Head, HRD&SS
	11:00 AM	Presentation & Discussion on **SCSP/TSP operated at Divisions & Res. Centers**- Dr Charan Singh, Principal Scientist & Co-ordinator of SCSP/TSP
	11:15 AM	Presentation & Discussion on **HRMS (Annual Training Plan) – Internal Human Resource Development + Farmers First Project** - Dr Bankey Bihari/Pr. Scientist, Nodal Scientist, HRMS and Farmers First
	11:30 PM	Presentation & Discussion on **Swachchhta Abhiyan at Headquarters & Research Centers**- Dr Indu Rawat, Scientist (Home Management/ FRM)
	11:45 PM	Discussion on the **Scheduled Requirement of the Institute/PME Cell** (Annual Report, Monthly Report, Newsletter, Institute's Ranking, Correspondence for Approvals of Papers, Papers' Protocol etc.) Dr M. Muruganandam, Mem. Sec., IRC_2022
	12:00 PM	**Awards/Recognition of Scientists, and Recognition of Retiring Scientists**

		Dr M. Madhu, Director & Chairman, IRC-2022/PME Cell
	12:15 PM	**Plenary Session, Concluding Remarks and Recommendations** - Dr M. Madhu, Director & Chairman, IRC-2022
	12:30 PM	**Vote of Thanks -** Dr M. Muruganandam, Member Secretary, IRC_2022

(Note: Sl. No. of the projects, up to Sl. No. 61 is as per IRC meeting proceedings, 2021)

5.2 AGENDA & PROGRAMME (27.8.2022)

S. No.	Topic	Timing on 27th Aug. 2022	Responsibility
1.	National Mission on Sustainable Himalayan Ecosystem Project (2nd Phase): Agriculture	10.30-11.00 AM	Dr Gopal Kumar
2.	Inter-Institutional collaborative project (Nodal Institute: ICAR-Central agroforestry Research Institute, DST funded)		
3.	New DBT project	11.00-11.15 AM	Dr D.C. Sahoo/ Dr Hombegowda
4.	Meteorological-data based project proposal	11.15-12.00 Noon	Dr U Mandal
5.	Effect of Natural Farming Practices on Resource Conservation and Productivity in different Agro Ecological Regions of India	12.00-12.45 PM	Dr D Dinesh
6.	Discussion	12.45-1.00 PM	Participants

5.3 IMPORTANT GUIDELINES FOR PRESENTATION

A. Concluding projects

1. Projects concluding in the year should be presented giving overall findings under the project till date and conclusions in terms of stated short term/long term objectives, clearly spelling out the findings and possibilities for up-scaling, and defining domain area, mechanism and resources required.
2. Timeline for submission of PPP-II, III and up-scaling and demo in farmers' fields/stakeholders' instances may be briefed.
3. The relevance to the national programs/schemes, UN's SDGs, carbon credits/sinks created, land neutrality, area reclaimed, innovations in methods/ strategies, ITK, gender sensitivity etc., if any, maybe briefed.

B. Ongoing projects

4. While presenting the progress of a project, allotted time limit to be followed. The consolidated results and observations maybe brought in the presentation.
5. The relevance to the national programs/schemes, UN's SDGs, carbon credits/sinks created, land neutrality, area reclaimed, innovations in methods/ strategies, ITK, gender sensitivity etc. may be briefed.

C. New project proposals

6. New project proposals must be based on stakeholders' analysis, extensive review, peer deliberations, patent search and availability of resources in the Institute. It is mandatory for the PIs and Heads of the Research Centers & Divisions to ensure availability of all the resources required for new projects.
7. The proposal presentation slides should include brief title, participating scientists, theme area (P1-P6), clear objectives, observation attributes/ monitorable indicators, responsibility of scientists, time-frame of defined deliverables, and overall outcome maybe explained.
8. Possible links to the national/regional agenda/schemes/programs and/or UN's SDGs, carbon credits/sinks potential, land neutrality associated, area to be reclaimed, innovations in methods/strategies, gender sensitivity, ITK etc., if any may be spelt out.

D. General points

9. Project evaluation and ranking will be as per the scoring in the pre-decided attributes **(Table1).**

10. Research highlights of the project in 2-3 lines should be submitted to the PME Cell for processing further and record. However, core projects and collaborative projects may have a paragraph of highlights. A Google Form Link will be sent by the PME Cell for this purpose.
11. Also, any change in Leader or Associates or extension of duration etc. suggested and/or needing IRC's approval should be presented in a slide form at the end of presentation for approval.
12. Uniformity of slides **(Fig.1),** standard units (as referred in IJSC, D. Dun) and patterns suggested may be followed.
13. Time **limits** should be strictly followed during presentations. Core Projects (30 min.), Concluding Projects (20 min.), Collaborative + Externally Funded Projects (20 min.), Continuing Projects (10 min.), Observational Trials (OT,15 min.) and New Proposals (20 min.)**(Table 2).**
14. Participants may raise questions during the stipulated time at the end of each presentation. Questions can be shared in the "Chat box" for moderation by the moderator.
15. The presentation of the projects must be well rehearsed, so that it may be completed smoothly within the stipulated time frame.
16. Programme Leader(s) will work as moderator(s) during presentation, discussion and critical comments on the project, which is mandatory for each project. The mandatory comments for a project must be finalized with active participation and comments of Programme Leader and OIC (PME Cell), which will be approved by the Competent Authority.

E. Project evaluation

17. All the project presentations during IRC-2022 will be evaluated by Chairman of IRC, theme leader, external experts and project leader based on the following criteria & sub-criteria with the respective weights. Each criterion will be evaluated on the scale of 1-10. Weightage for technical adequacy and style of preparation will have 70 and 30 percent, respectively. Based on the cumulative scores, presentations will be rated as per rating chart given in **Table 1.**

Table1.Criteria and their Weights for Project Evaluation Ranking

Criteria and sub-criteria and their weights					
Use of standard format, clarity, appropriate use of visual aids, and of standard terminologies and unit	Logical sequence and clarity in message delivery within permitted time		Achievement in the line of objectives and beyond	Statistical tool for testing stated hypothesis and interpretation Of results	Logical, precise and appropriate responses
2.0	1.0		5.5	1.0	0.5
Rating Chart					
Grade	**Excellent**	**Very Good**	**Good**	**Average**	**Improvement Needed**
Total Weighted Score	**≥ 80**	**≥70and< 80**	**≥60and< 70**	**≥50and< 60**	**<50**

Table 2.NumberofProjectsandTime Limits

Sl No	Project Status	Nos	Allotted Time(Min.)			Total hours
			Presentation	Discussion	Total	
1.	Core Projects	03	20	10	**30**	1hours 30min.
2.	Concluding Projects	5	15	5	**20**	1hours 40min.
3.	Collaborative+ Externally Funded Projects	07 + 16	15	5	**20**	7 hours 40min.
4.	Continuing projects	33	7	3	**10**	5hours 30 min.
5.	Observational Trails(OT)	05	10	5	**15**	1 hours 15min.
6.	New Proposals	8	15	5	**20**	2hours 40min.
7.	**Total**	**79**	-	-	-	-
8.	Theme Discussion(P1-P6)	06	-	-	**10**	1 hour
9.	Other Mandated Programs/Discussions	9	-	-	**15**	2hours 15min.
10.	Seminar	01	90	30	**120**	2hours
10.	**Total**	**94**	-	-	-	**25 hours 30min.**

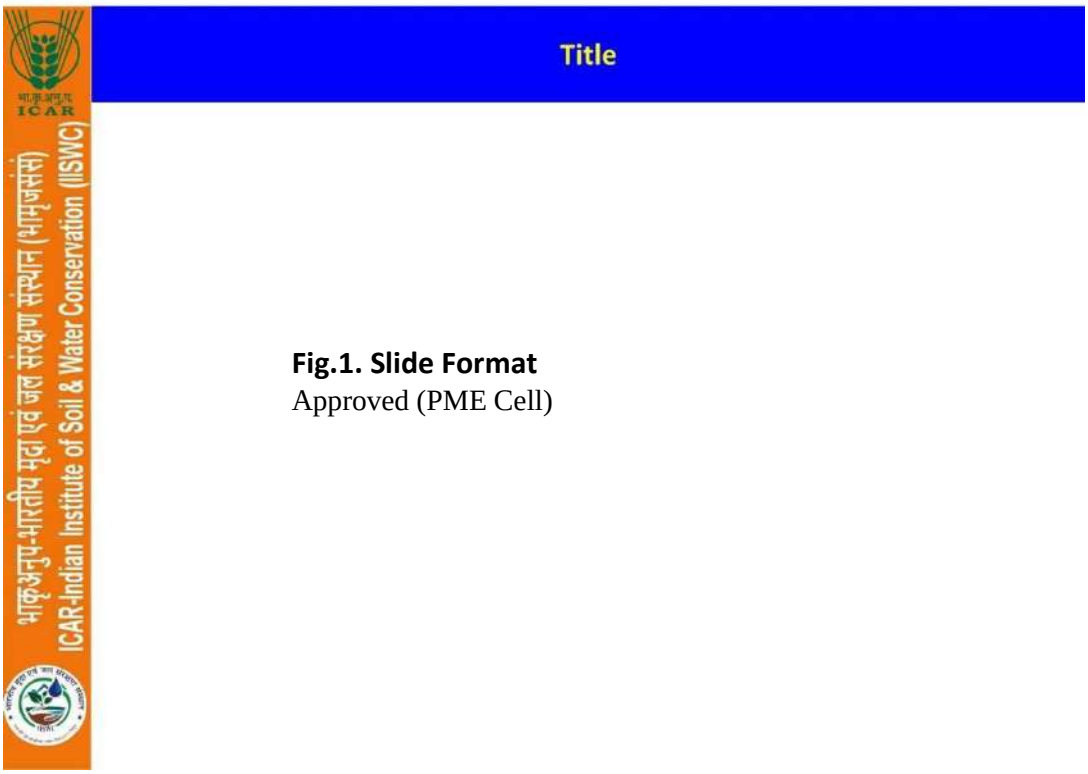

Fig.1. Slide Format
Approved (PME Cell)

6.0 STATUS OF PROGRAMME WISE ONGOING PROJECTS AND IRC COMMENTS

P-1 WATER EROSION APPRAISAL IN DIFFERENT AGRO-ECOLOGICAL REGIONS

1.1 INVENTORY AND DATABASE OF EROSION STATUS USING MODERN TOOLS AND PROCEDURES

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
1.	Soil Erosion Estimation based on Radio Tracer Technique and Soil Quality Assessment in Mountainous Landscape of North-West Himalaya. (NRMAIISWCCOL 202100100185) **(Collaborative/ Externally Funded Project)**	M. Sankar Deepak Singh Suresh Kumar IIRS	SS&A Division, Dehradun	2021-22	2024-25 (To be continued)	Tehri Watershed in North western Himalayas (Uttarakhand) and other part of India covering 7 research centres of IISWC	Project is extended for two years till 2024-25. Name of Dr Deepak Singh is included. Data source for estimation of soil loss through RUSLE need to be defined. (Action: Dr M. Sankar) **Progress grade: Very Good**
2.	Assessment of variability and trend of climatic parameters at various time scales in different regions of India **(Core Project)** **(NEW PROJECT)**	Uday Mandal S.S. Shrimali Shakir Ali S.Manivannan K.K. Sharma B.S. Naik Jyotirmayee Lenka Gaurav Singh Manoj Kumar Dinesh Kumar	H & E Division, Dehradun/ Research Centres	2022-23	2027-28	Dehradun and Research Centres	Uniform data collection and analysis procedure may be finalised and used. ExcelStat: Multi-user software may be procured and used for analysis. Available previous database, analyses and documents may be referred and used to bring out a consolidated approach. Climatic and/or its variations may be analysed and situation-specific suitable guidelines and advisories based on the climate or its variation may also be prepared and disseminated to farmers and other stakeholders. (Action: Dr U Mandal and PI of research Centres)

1.2 SOIL EROSION PROCESS MODELING AND CLIMATE CHANGE STUDIES

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
3.	Study of atmospheric and soil carbon dioxide fluxes in temperate mountainous ecosystem of Western Ghats with reference to climate change impact assessment. (NRMAIISWCCOL 201700100131) **(NRSC-ISRO, Hyderabad, Externally funded)**	P. Raja S.K. Anneppu K. Kannan	Udhagaman-dalam	2017-18	2022-23 (To be concluded)	Research Farm and Nilgiri district	Project is extended for one year till 2022-23. Name of Dr SK Anneppu is included. Name of Hombegowda H.C. deleted. (Action: Dr P. Raja) **Progress grade: Excellent**
4.	Assessment of potential soil erosion of India. (NRMAIISWCCIL 201800400152) (Core Project)	Uday Mandal P.R. Ojasvi Gopal Kumar D. Mandal	Hydrology & Engineering, Dehradun	2018-19	2022-23 (To be concluded)	Headquarters, Dehradun	Extended for one year, 2022-23. Complete objective 2 and publish potential soil erosion map of Uttarakhand/India. Objective 3 scenario analysis may be completed subsequently. (Action: Dr Uday Mandal) **Progress grade: Excellent**
5.	Development of Artificial Intelligence (AI) models for watershed scale modelling using the data of Ramganga watershed. (NRMAIISWCCIL 201900100160)	Sadikul Islam S.S. Shrimali P.R. Ojasvi	Hydrology & Engineering, Dehradun	2019-20	2022-23 (To be concluded)	Ramganga River Catchment	Sh Akshay Dheeraj name is deleted. (Action: Dr Sadikul Islam) **Progress grade: Excellent**
6.	Development of rainfall energy based erosivity factor to formulate a daily based generic erosion equation. (NRMAIISWCCIL 201900200161)	Sadikul Islam Uday Mandal Gopal Kumar	Hydrology & Engineering, Dehradun	2019-20	2024-25 (To be continued)	Dehradun, Koraput & Kota	Develop relationship between intensity and drop size. IISc and such others may be contacted for relevant data sharing. Sh Akshay Dheeraj name is deleted. (Action: Dr Sadikul Islam) **Progress grade: Excellent**

1.3 SOIL CARBON DYNAMICS AND EROSION PRODUCTIVITY STUDIES

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
7.	Erosion productivity relationships for evaluating vulnerability and resiliency of soils under different agro-climatic regions of India. (NRMACSWCRTI CIL200800100014) (Core Project)	D. Mandal N.K. Sharma (upto Aug 2022) Sadikul Islam S. Patra	Soil Science & Agronomy, Dehradun	2008-09	2024-25 (to be continued)	Research Farm of Headquarters and all Research Centers	Ravine centre data to be presented in a single analytical format. Name of Dr G.L. Meena included and Dr B.L. Mina deleted in Kota. Dr Rajan K added in Datia. Contradictory trend of fertilizer on erosion need further investigation. (Action: Dr D. Mandal and leaders at all Research Centers) **Progress grade: Excellent**
		K.K. Sharma R.K. Dubey R.B. Meena	Agra	2009-10			
		M. Prabhavathi B.S. Naik	Ballari	2009-10			
		Sharmistha Pal	Chandigarh	2009-10			
		Rajan K Dinesh Kumar R.S. Yadav	Datia	2009-10			
		Ch. J. Dash	Koraput	2009-10			
		Kuldeep Kumar Gulshan Kr. Sharma G.L. Meena	Kota	2009-10			
		K. Kannan P. Raja S.M. Vanitha	Udhagaman-dalam	2009-10			
		D. Dinesh A.K. Singh Dinesh Jinger	Vasad	2021-22			

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
8.	Assessment of soil organic carbon in transit under erosion processes: A source or sink for atmospheric CO_2. (NRMACSWCRTI CIL201100400050) **(Collaborative project)**	M. Sankar Lekh Chand CCPI: Suresh Kumar, IIRS, Dehradun	Soil Science & Agronomy, Dehradun	2011-12	2023-24 (To be continued)	Research Farm, Dehradun	Quantum of carbon emission and CO_2 equivalent calculation may be rechecked. Reason for low yield may be ascertained and justified. The yield should supposed to be at par with conventional tillage once improvement in soil properties has been affected. The critical factor limiting yield need to be identified and amended to make NT a promising technology for soil conservation. Possibility of N immobilization linked yield reduction and influence of N addition to yield increase may be studied. (Action: Dr M. Sankar) **Progress grade: Excellent**
9.	Environmental tracer based study on erosion induced loss of soil organic carbon and its impact on agronomic productivity and environmental quality. (NRMAIISWCCOL 201500700093) **(ICAR-National Fellow, Externally funded)**	D. Mandal	National Fellow Programme	2015-16	2024-25 (To be continued)	Research Farm, Dehradun and Doon Valley region	Dr Rama Pal will analyze BOD in runoff samples to correlate with dissolved organic carbon. Erosion induced soil carbon loss in different phases of erosion may be worked out. (Action: Dr D. Mandal) **Progress grade: Excellent**
10.	Carbon sequestration potential of prevailing and recommended land uses in reclaimed degraded ecosystems under different agro-ecological regions of India. (NRMAIISWCCIL 201900300162) **(Core Project)**	Gopal Kumar D. Mandal Rajesh Kaushal Ramanjeet Singh Trisha Roy S. Patra P.R. Ojasvi	Soil Science & Agronomy, Dehradun	2019-20	2023-24 (To be continued)	Sainji Watershed	Names of Dr S.K. Dubey (Agra), Dr P.L. Bhutia (Chandigarh), Dr Suresh Kumar (Koraput) and Dr V.K. Thilagam (Ooty) deleted. Names of Dr K.K. Sharma, Dr Vikas Yadav (Agra), Dr S. Manivannan (Ooty) and Dr H C Hombegowda (Koraput in place of Ooty) included. Soil carbon sequestration is progressive phenomenon over time. Methodology to discount time for comparing different conservation and land use systems in different agro-ecological regions need to be worked out.
		R.B. Meena K.K. Sharma Vikas Yadav	Agra			Jalalpur Watershed	
		M. Prabhavathi B.S. Naik M.N. Ramesha	Ballari			Netranahalli Watershed	

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
		Sharmistha Pal Pankaj Panwar O.P.S. Khola	Chandigarh			Sukhomajari Watershed	So, standard and uniform procedure and protocol for carbon analysis and temporal carbon assessment may be finalised through a workshop for uniform data collection and analysis, especially to capture carbon stock as influenced by treatments executed in different duration of timings. (Action: Dr Gopal Kumar and leaders at all Research Centers) **Progress grade: Excellent**
		Dinesh Kumar R.S. Yadav	Datia			Jigna Watershed	
		Jotirmayee Lenka HC Hombegowda	Koraput			Rajput Watershed	
		G.L. Meena Shakir Ali S Kala Ram A Jat Ashok Kumar	Kota			Badakheda Watershed	
		S. Manivannan K. Kannan	Udhagaman-dalam			Ayalur Watershed	
		D. Dinesh Gaurav Singh Dinesh Jinger	Vasad			Antisar Watershed	
11.	Study of Carbon Footprint in Agricultural Land Use System from the Temperate and Tropical Ecosystem Western Ghats under Climate Change Scenario **(Inter Institutional Collaborative Project)** **Collaborating Centre : KSCSTE-CWRDM, Calicut, Kerala** **(DST Funded)** **(NEW PROJECT)**	P. Raja K. Kannan S.K. Annepu ---------- U. Surendran KSCSTE-CWRDM	Udhagaman-dalam	2022-23	2024-25	Western Ghats in Tamilnadu	Standard protocol for assessment of CO_2 footprint and greenhouse gas emission reduction assessment may be prepared and used. Share them with PME cell. Name of Hombegowda H.C. deleted. (Action: Dr P. Raja)

P-2 CONSERVATION MEASURES FOR SUSTAINABLE PRODUCTION SYSTEM

2.1 RESOURCE CONSERVATION MEASURES FOR ARABLE LANDS

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
12.	Restoration of shifting cultivated lands for resource conservation and sustainable production in Eastern Ghats. (NRMAIISWCCIL 201500800094)	Jotirmayee Lenka	Koraput	2015-16	2022-23 (To be concluded)	Shifting cultivated area in Koraput district	Presentation should be objective wise. Nutrients (N, P, K) loss in runoff should be rechecked and unit should be used in standard format. Treatment details to be mentioned below table and graph. Name of Dr D.C. Sahoo deleted (Action: Dr Jotirmayee Lenka) **Progress grade: Very Good**
13.	Development of conservation agriculture practices for rainfed production systems in North-Western Himalayan region. (NRMAIISWCCIL 201700300133)	N.K. Sharma (upto 31.8.2022) Raman Jeet Singh (PI from 1.9.2022) Trisha Roy Uday Mandal Rama Pal	Soil Science & Agronomy, Dehradun	2017-18	2022-23 (To be concluded)	Research Farm, Dehradun	Name of Mr A.K. Gupta is deleted. Name of Dr Rama Pal is included. Dr Raman Jeet Singh is PI from 1.9.2022) Energy-carbon-water use efficiency to be calculated. (Action: Dr Raman Jeet Singh) **Progress grade: Excellent**
14.	Evaluation of conservation tillage based *Arundo donax* mats for resource conservation and enhancing cropping intensity on sloping crop lands. (NRMAIISWCCIL 201700400134)	Ramanjeet Singh N.K. Sharma (Upto 31.8. 2022) Gopal Kumar	Soil Science & Agronomy, Dehradun	2017-18	2022-23 (To be concluded)	Research Farm, Dehradun	Relate soil moisture storage and crop yield. Water use efficiency, carbon and energy foot print to be calculated besides economics. (Action: Dr Ramanjeet Singh) **Progress grade: Excellent**
15.	Effect of integrated nutrient management on soil properties and productivity of chickpea under rainfed vertisols of South India. (NRMAIISWCSIP 201900500164) **(AICRPDA Collaborative Project with CRIDA, Hyderabad)**	M.N. Ramesha Ravi K.N. M. Prabhavathi	Ballari	2018-19	2022-23 (To be concluded)	Research Farm, Ballari	Drought data to be presented in IRC_2023 meeting. (Action: Dr M.N. Ramesha) **Progress grade: Excellent**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
16.	Efficient utilization of fruit / vegetable waste (FVW) for improving soil health and productivity of organic agri-oleri system. (NRMAIISWCCIL 201800500153)	Ram Prasad Pradeep Dogra O. P. Premi	Chandigarh	2018-19	2022-23 (To be concluded)	Research Farm, Chandigarh	Analysis of physico-chemical properties of decomposable material and system productivity in terms of tomato may be done. Quantified nutrients in T3-T6 may be added and compared with T-2 and others for suitable recommendation. No additional treatment may be taken up. Summary and table of major findings and clear recommendations to be included in presentation. (Action: Dr Ram Prasad) **Progress grade: Very Good**
17.	Soil erosion and runoff studies in system crop intensification of different crops with mulching. (NRMAIISWCCIL 201900400163)	Lekh Chand D.V. Singh S. Patra	HRD&SS, Dehradun	2019-20	2022-23 (To be concluded)	Research Farm, Dehradun	Compare the impacts of treatments with base values and negative impact of mulching need explanation with justification. Summary table with clear recommendation to be included. (Action: Dr Lekh Chand) **Progress grade: Good**
18.	Evaluation of maize based inter-cropping system to conserve soil and water and improve farm income in rainfed areas of North-Western Himalaya. (NRMAIISWCCIL 202000100171)	Devideen Yadav D.V. Singh Deepak Singh	Soil Science & Agronomy Division, Dehradun	2020-21	2024-25 (To be continued)	Research Farm, Dehradun	Data on interception, through fall, stem flow, etc. may be checked in consultation with Dr Rajesh Kaushal. Line diagram for treatment comparison should not be used. Dr Deepak Singh added. Name of Mr. Anand Kr. Gupta is deleted. (Action: Dr Devideen Yadav) **Progress grade: Excellent**
19.	Sustaining crop productivity and enhancing resource use efficiency through soil surface management and diverse cropping systems in semi-arid region of south-eastern Rajasthan. (NRMAIISWCCIL 202000200172)	Kuldeep Kumar I. Rashmi Shakir Ali Ashok Kumar	Kota	2020-21	2024-25 (To be continued)	Research Farm, Kota	Tillage operation and weed management practice should be well explained in the presentation. Unsatisfactory presentation, needs improvement. Water use efficiency data to be collected and analyzed in coming years. (Action: Dr Kuldeep Kumar) **Progress grade: Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
20.	Development of conservation agriculture practices for sustainable production system in Central Gujarat. (NRMAIISWCCIL 202001200182)	D. Dinesh Dinesh Jinger A.K. Singh	Vasad	2020-21	2024-25 (To be continued)	Research Centre Vasad Anand District Gujarat	Parameters of soil and water should be monitored. Energy and economy calculation to be included. Workshop on zero tillage and protocols on different parameters under tillage experiments be organised under the guidance of Dr NK Sharma. (Action: Dr Dinesh) **Progress grade: Excellent**
21.	Evaluating different tillage and residue management practices under supplementary irrigation in black gram, mustard cropping system. (NRMAIISWCCIL 202100400188)	Ram A. Jat I. Rashmi Shakir Ali Ashok Kumar Gulshan Kr. Sharma	Kota	2021-22	2025-26 (To be continued)	Kota	Initial plot variability and its possible influence may be accounted. Data on water use efficiency, water, energy and carbon footprints may be collected and discussed. (Action: Dr Ram A Jat) **Progress grade: Very Good**
22.	Determining resource conservation potential of bio-degradable waste and their on-farm utilization to increase crop productivity and profitability. (NRMAIISWCCIL 201700500135)	Lekh Chand N.K. Sharma (up to 31.8.2022) M. Sankar	HRD&SS, Dehradun	2017-18	2022-23	Research Farm, Dehradun	Extended for 1 year. Consolidated data on Organic carbon, C: N ratio economics, etc. should be presented. (Action: Dr Lekh Chand) **Progress grade: Good**
23.	Evaluation of sorghum-based Agri-oleri systems for resource conservation and profit maximization in red soils of Bundelkhand **(NEW PROJECT)**	Dinesh Kumar R.S. Yadav D.M. Kadam	Datia	2022-23	2024-25	Research Farm of Datia Research Centre.	Bitter guard is advised in place of cluster bean. Reduce treatment upto 5-6 instead of 9 and intercropping suitably planned. (Action: Dr Dinesh Kumar)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
24.	Re-composting of spent mushroom biomass for soil quality improvement and crop productivity enhancement. **(NEW PROJECT)**	S.K. Annepu K Kannan P Raja P Sundarambal SM Vanitha	Udhagamandalam	2022-23	2024-25	Research farm and farmer's fields of Udhagamandalam, Research Centre	Natural farming as one of the treatments in place of T-8 and the recommended (TNAU)/farmers practices may be included. Nutrient budgeting and economics accounting inputs and outputs, balancing and principles of circular economy and composting may be included. At least 10 farmers in TSP/SCSP villages may also brought under participatory experimentation and monitoring with data collection and analysis. Studies on carrot, potato and beans, density, spreading of roots, organic matter load may be included. (Action: Dr S.K. Annepu)
25.	Impact assessment of foliar nano N application on soil C:N ratio and C mineralization and its effectiveness on crop productivity **(NEW PROJECT)**	Trisha Roy Rama Pal Uday Mandal D. Mandal	HRD&SS Division	2022-23	2025-26	Research Farm Selaqui	Experimental plot size should be decided according to the availability of area. Start from *Rabi* 2022. (Action: Dr Trisha Roy)
26.	Effect of Natural Farming Practices on Resource Conservation and Productivity in different Agro Ecological Regions of India **(CORE PROJECT, NEW PROJECT)**	D. Dinesh Gaurav Singh Dinesh Jinger	Vasad	2022-23	2026-27	Vasad Research Centre, Headquarters and Centres of IISWC.	Workshop to be organised to finalize the location of study, detail of treatments plan, the cropping system factors and technical program for all the cooperating centres. Possibility for runoff and soil loss measurements may be explored and included in the study. Time replication for treatments and replication within plots for study parameters may be considered. Six treatments instead of 8, restricting to conventional and crop diversification may be considered.
		Lekh Chand Trisha Roy Deepak Singh Rama Pal	HRD&SS, Division, Dehradun				
		R. B. Meena K K Sharma R. K. Dubey Vikas Yadav	Agra				
		M.Prabhavathi B.S.Naik M.N.Ramesha Ravi Dupdal Ravi K.N.	Ballari				

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
		OP Premi Ram Prasad Sharmistha Pal	Chandigarh				Possibility for external funding may be explored. (Action: Dr D. Dinesh and PI, Centres)
		K Rajan DM Kadam D Kumar	Datia				
		Jotirmayee Lenka Ch. J.P. Dash Rajesh Bishnoi	Koraput				
		Ram A Jat I. Rashmi G L Meena Ashok Kumar G. Kr. Sharma	Kota				
		K. Kannan P Raja S. Kr. Annepu S. M .Vanita P. Sundarambal	Udhgama-ndalam				
27.	National Mission on Sustainable Himalayan Ecosystem Project (2nd Phase): Agriculture Inter-Institutional collaborative project (**Nodal Institute: ICAR-Central agroforestry Research Institute, DST funded) (NEW PROJECT)**	Gopal Kumar M. Madhu Uday Mandal Ramanjeet Singh Rajesh Kaushal	Soil Science & Agronomy, Dehradun	2022-23	2024-2025	Indian Himalayan Region (IHR)	Impacts of extreme weather induced changes on agro-ecosystems and crop production and suitable strategies to increase crop production and income may be quantified in the study. (Action: Dr Gopal Kumar)

2.2 RESOURCE CONSERVATION MEASURES FOR NON-ARABLE LANDS

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
28.	Upscaling research assessment of productivity, hydrological behaviour, resource conservation and intangible benefits of selected commercial bamboo species in Uttarakhand. (NRMAIISWCCOL 201701000140)	Rajesh Kaushal D. Mandal Pradeep Dogra J.M.S. Tomar D.V. Singh Sadikul Islam	Plant Science, Dehradun	2016-17	2022-23	Mednipur and Dhoolkot, Dehradun	The INBAR funder project extended for a year and continued as in-house project. Names of Dr Harsh Mehta and Mr. A.K. Gupta deleted A project may be submitted to external funding agency in collaborative/core project mode in for the next phase. (Action: Dr Rajesh Kaushal) **Progress grade: Excellent**
29.	Evaluation of *Bael* and Olive based agro-forestry system with soil amend-ments in Doon Valley. (NRMAIISWCCIL 201501100097)	J. Jayaprakash A.C. Rathore D.V. Singh Harsh Mehta	Plant Science, Dehradun	2015-16	2024-25 (To be continued)	Research Farm, Dehradun	Progress is unsatisfactory and contribution from Co-PI are not visible. Data should be statistically analyzed and presented. (Action: Dr J. Jayaprakash) **Progress grade: Good**
30.	Improvisation of soil working techniques for enhancing tree establish-ment under rainfed conditions of North-Western Himalayas. (NRMAIISWCCIL 201600400118)	D.V. Singh J Jayaprakash Vibha Singhal AC Rathore Devideen Yadav	Soil Science & Agronomy, Dehradun	2016-17	2023-24 (To be continued)	Dhoolkot Research Farm, Pasauli, Dhanpau and Lakhwar villages, Dehradun district	Presentation should be objective-wise reflecting the influence of treatments. Comparison of sub-surface and root zone moisture prevailing in different treatments may be done. Root study may be included. The experiment can be upscaled under TSP and SCSP programmes at Headquarters and Centres. (Action: Dr D.V. Singh) **Progress grade: Very Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
31.	Evaluation, characterization and selection of elite genotypes of *Cassia auriculata* for cultivation in semi- arid regions. (NRMAIISWCCIL 201600600120)	S. Kala H.R. Meena I. Rashmi	Kota	2016-17	2022-23 (To be concluded)	Research Farm, Kota	Extended for a year. Work on technology and package of practices for high density planting. Assessment of carbon sequestration potential may be included. Policy brief may be prepared and submitted. Upscale under TSP and SCSP programme and linkage with entrepreneurs to bring technology under commercialization. Good work and very well presented. (Action: Dr (Mrs.) S. Kala) **Progress grade: Excellent**
32.	Resource utilization and productivity of Dragon fruit based horti-silviculture system under rainfed agro eco-systems of Central Gujarat.(NRMAIISWCCIL 201600700121)	Dinesh Jinger D. Dinesh Gaurav Singh	Vasad	2016-17	2022-23 (To be concluded)	Research Farm, Vasad	Presentation on impacts of treatments could be made better. Re-appropriation of the design and replications may be done since part of treatments lost to the Bullet train tract. (Action: Dr Dinesh Jinger) **Progress grade: Very Good**
33.	Assessment and improvement of nutritional quality of horticultural crops on sloping lands in North-West Himalayas. (NRMAIISWCCIL 201701100141)	A.C. Rathore M. Sankar D.V. Singh	Plant Science, Dehradun	2017-18	2022-23 (To be concluded)	Research Farm and Pasauli village, Vikasnagar	Influence of organic carbon and clay content of soil on fruit quality may be established. (Action: Dr AC Rathore) **Progress grade: Excellent**
34.	Regulated deficit irrigation and canopy architecture management for fig (*Ficus carica L.*) in semi-arid vertisols.(NRMAIISWCCIL 201701200142)	M. Prabhavathi M.N. Ramesha	Ballari	2017-18	2022-23 (To be concluded)	Research Farm, Ballari	Site of experiment should be characterized and be representative of non-arable land. Means to tackle salinity and water stagnation problem in sub-soil may be explored and adopted. Water use efficiency and water productivity may be worked out. Algal growth in the associated pond may be suitably controlled taking help from available sources. (Action: Dr M. Prabhavathi) **Progress grade: Very Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
35.	Microsite modification and soil and water conservation techniques for improving productivity of *Melia dubia* on degraded lands. (NRMAIISWCCIL 201900700166) **(Core projects)**	Rajesh Kaushal D.V. Singh J.M.S. Tomar Rama Pal Sadikul Islam	Plant Science, Dehradun	2019-20	2026-27 (To be continued)	Research Farm, Dehradun	Names of Dr AK Gupta, Dr Harsh Mehta and Dr P.L. Bhutia are deleted from Dehradun and Chandigarh. Name of Dr Rama Pal is included for microsite-soil-microbial analysis. Data on benefits of SWC measures such as plastic mulching, stone mulching, staggered contour trenching, sub-surface planting improvement etc. may be provided. Define suitability of *Melia Dubia* according to agro-ecological zone. Climatic zones of experimental sites should be defined and clone-specific plantation and growth may be compared. Excellent progress in one year old project. Very well presented. (Action: Dr Rajesh Kaushal) **Progress grade: Excellent**
		Pankaj Panwar Sharmistha Pal O.P.S. Khola	Chandigarh			Research Farm, Chandigarh	
		Hombegowda H.C. (upto Aug. 2022) S. Manivannan K. Kannan	Udhagamandalam			Farmers' Field	
		Dinesh Jinger D. Dinesh	Vasad			Research Farm, Vasad	
36.	Evaluation of agri-horticulture land use systems for degraded eco-system of South-Eastern Rajasthan. (NRMAIISWCCIL 201900800167)	H.R. Meena Shakir Ali Ashok Kumar Kuldeep Kumar I. Rashmi	Kota	2019-20	2025-26 (To be continued)	Research Farm, Kota	Data on soil hydrologic property can be provided. (Action: Dr H.R. Meena/Dr Shakir Ali) **Progress grade: Very Good**
37.	Evaluation of rainwater management practices in mango based agri-horticultural system. (NRMAIISWCCIL 202000300173)	Jotirmayee Lenka Ch J. Dash Rajesh Bishnoi	Koraput	2020-21	2026-27 (To be continued)	Research Farm, Koraput	Statistical analysis of data is required. Data on soil moisture should be presented treatment wise. Rainfall/runoff analysis and rainwater use efficiency should be done on priority. Canopy measurement in high density planting (6 x 6 m) be specified and analyzed. Statistical analysis to be carried out. Use rice bean instead of dangarani as it is a local name. Name of Dr D.C. Sahoo deleted and name of Dr Ch J. Dash included) (Action: Dr Jotirmayee Lenka) **Progress grade: Very Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
38.	Restoration of lantana infested degraded forest of Shiwaliks, India. (NRMAIISWCCIL 202000500175)	Manoj Kumar Sharmistha Pal Pankaj Panwar O.P.S. Khola Pradeep Dogra	Chandigarh	2020-21	2027-28 (To be continued)	Research Farm, Mansa Devi	Name of Dr P.L. Bhutia deleted and name of Dr Manoj Kumar is added as a PI. Treatment wise runoff intensities and soil loss should be recorded and analyzed after proper calibration and validation. Study the features and influences of competing vegetation and regrowth potential of removed vegetation. Removal of Lantana in 2nd year after germination suggested to be effective. (Action: Dr Manoj Kumar) **Progress grade: Very Good**
39.	Ecological impacts of soil conservation and afforestration works on degraded lands in North-Western Himalayan region. (NRMAIISWCCIL 202000600176) **(Eco-Task Force) (Collaborative Project)**	D.V. Singh Matber Rana P.R. Ojasvi	HRD&SS Division, Dehradun	2020-21	2022-23 (To be concluded)	Mohand, Aglar, Shahjahanpur, Kiarkuli, Kalsi, Jounsar bhabar, Lakhwar, Mussoorie and Sahastradhara	Name of N.K. Sharma deleted. Name of Dr Matber Rana included in place of Dr J Jayaprakash. Species-wise and site-wise characteristics like altitude, slope, soil type etc. to be specified and linked with impacts of SWC measures on survival, growth, biomass and moisture, soil/resource conservation attributes. SWC measures may be introduced and/or analyzed in target-based plantations executed by Eco-Task Force sites and impact analysis be done, at least in few workable and comparable sites taking temporal (existing plantations made in few years to over 35 years) and spatial influences into consideration. (Action: Dr D.V. Singh) **Progress grade: Very Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
40.	Identification and mass multiplication of superior germplasm of promising bamboo species for enhancing productivity of degraded land (NRMAIISWCCOL 202001300183) (**UBFDB, Uttarakhand, External funded)**	Rajesh Kaushal J.M.S. Tomar Trisha Roy	Plant Science Division	2020-21	2022-23 (To be concluded)	Dehradun	Name of Dr Harsh Mehta is deleted. Nursery techniques for identified bamboo species can be documented, at least for few species. Out of 38 germplasm maintained impact of plantation techniques and SWC measures on ecology, economy and resource conservation as compared with control situations may be done to bring in research inputs to developmental activities executed. Success story may be shared with ICAR and other stakeholders during the course of the project. (Action: Dr Rajesh Kaushal) **Progress grade: Very Good**
41.	Cultivation and value addition of aromatic plants for livelihood security of farmers of Uttarakhand Region. (NRMAIISWCCOL 202001400184) (**External, IIT_D, collaborative projects)**	J.M.S. Tomar Rajesh Kaushal S.N. Naik U.K. Agarwal K.K. Pant	Plant Science Division IIT Delhi	2020-21	2022-23 (To be concluded)	Dehradun	Soil quality improvement over reference soil properties may be analyzed. Demonstration unit at the Selakui research farm should be given to suitable entrepreneur/start-up unit on contractual basis. National/Global standard on citral content of lemon grass for export/designated uses has to be compared and documented. Reason for high citral content in few sites has to be analyzed. Spent biomass (bagasse) after oil extraction may be used for composting. Research inputs may be brought-in, especially on impact of soil quality improvement, infiltration etc. in the study sites of non-arable lands. Value addition of the produce may be worked out. The existing partnership with IIT Delhi may be used to upscale the research/technological outputs. (Action: Dr JMS Tomar) **Progress grade: Very Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
42.	Performance of subtropical fruit species under different microbial amendments on degraded lands. **NRMAIISWCCIL 202100500189**	A.C. Rathore J. Jayaprakash M. Sankar	Plant Science Division	2021-22	2025-26 (To be continued)	Research Farm, Dehradun	Name of Dr Harsh Mehta is deleted. Impact of soil microbial innoculam, liquid fertilizers and SWC measures on litter fall, soil moisture, resource use/conservation efficiency, survival, growth, biomass etc. may be worked out and analysed. Same treatments at some sites can be tried under TSP. (Action: Dr AC Rathore) **Progress grade: Very Good**
43.	Phyto-rehabilitation of saline-sodic Vertisols through *Prosopis pallida* based silvipastoral systems. **(NEW PROJECT)**	M.N. Ramesha M. Prabhavathi	Ballari	2022-23	2024-25	Research farm, Ballari Research Centre	Convert soil quality parameters into soil quality index for better understanding. Assess biomass production. The observations of the concluded OT may be compiled and submit a report. (Action: Dr M.N. Ramesha)
44.	Screening of tree species to be used as bioengineers for controlling soil erosion and slope stabilization under hilly ecosystem of north western Himalayas **(SERB-POWER Grant, DST) (NEW PROJECT)**	Vibha Singhal Trisha Roy Charan Singh	Plant Science Division, Dehradun	2022-23	2024-25	NW Himalayan watersheds in Garhwal	Appropriate spacing of trees as per site condition and architecture of canopy may be planned and included. (Action: Dr Vibha Singhal)
45.	Developing vegetation based technology for dust and erosion control along the National Highways **A collaborative project work with NHAI, New Delhi and National Highway Authority of India (NHAI) funded (NEW PROJECT)**	Gopal Kumar Rajesh Kaushal Uday Mandal Gulshan Sharma Devideen Yadav	Soil Science & Agronomy, Dehradun	2022-23	2023-2024	Meerut–Delhi expressway, Uttar Pradesh, etc.	Suitable grass species and local hardy species identified and planned for plantation may be assessed for positive impacts. Negative impacts, if any may also be studied. (Action: Dr Gopal Kumar)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
46.	Soil erosion, runoff and nutrient losses influenced by different types of vegetable crops and farming practices under Bundelkhand region **(NEW PROJECT)**	D. M. Kadam Dinesh Kumar R.S. Yadav	Datia	2022-23	2023-24	Research Centre Datia	Crop water requirement should be computed and matched with rainfall and how much can be supplied through life saving irrigation. Consider only four vegetables (instead of eight) for study with and without mulching and SWC practices, Experiment 1 is approved with and without mulching and 4 crops. Second experiment may be taken later based on experience of 1st experiment. (Action: Dr D. M. Kadam)

P-3 WATERSHED HYDROLOGY FOR CONSERVATION PLANNING

3.1 HYDROLOGICAL BEHAVIOUR OF LANDUSES AND MANAGEMENT PRACTICES

47.	Enhancing food and water security in arid region through improved understanding of quantity, quality and management of blue, green and grey water. (NRMAIISWCSOP 201901000169) **(DST, External, funded collaborative/Network Project)**	P.R. Ojasvi Shakir Ali S.S. Shrimali	Hydrology & Engineering, Dehradun	2018-19	2022-23 (To be concluded)	Rajasthan	As a knowledge partner, potential of increasing water resources, especially in surface runoff or groundwater recharge may be assessed. GIS based data and details may be super-imposed on Cadastral map for the help in micro-planning. Ground-ruthing and validation may be included. (Action: Dr PR Ojasvi) **Progress grade: Excellent**
48.	Evaluation of catchment-storage-command area relationship for improving rainwater productivity under integrated production systems. (NRMAIISWCCIL 201800600154)	Jotirmayee Lenka Ch. J. Dash	Koraput	2018-19	2022-23 (To be concluded)	Research Farm, Koraput	Gauging device to be installed for measurements. Nutrient in runoff to be quantified. Catchment-storage-command area relationships be evaluated Check nutrient loss data. Maintain depth of all the gauging stations. Standard units may be used. Name of Dr D.C. Sahoo deleted and name of Ch. J. Dash added. (Action: Dr Jotirmayee Lenka) **Progress grade: Very Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
49.	Effects of conservation agriculture practices on soil pore system and hydraulic properties in north-western Himalayas. (NRMAIISWCCIL 202000700177)	S. Patra M. Sankar Ramanjeet Singh	H&E Division, Dehradun	2020-21	2023-24 (To be continued)	Selakui Research Farm	Consolidated data and inferences may be presented. Objective-wise presentation to be made. (Action: Dr S. Patra) **Progress grade: Excellent**
50.	Partitioning of Evapotranspiration by Modelling of Water Budgeting and Assessment of CO_2 flux over Tea Plantation in Parts of Temperate Mountainous Ecosystem in Western Ghats, Tamil Nadu. (NRMAIISWCCOL 202100600190) (**Externally funded (NRSC-ISRO, Hyd.), Inter-institutional collaborative Project with CWRDM, Calicut)**	P. Raja K. Kannan S. Manivannan ---------- U. Surendran CWRDM, Calicut	Udhagamandalam	2021-22	2023-24 (To be continued)	Research Centre, Udhagam-andalam	Evapotranspiration and crop co-efficient at time scale to be calculated. R^2 value should be checked. Consolidated data on carbon assimilation potential and GWP may be presented. While every tree is a sink for CO_2 till it is harvested and burned and so is the case of tea, the CO_2 removed through leaves may be determined. Compare the ET value already available for tea with this study data. (Action: Dr P Raja) **Progress grade: Excellent**

3.2 WATER HARVESTING, GROUNDWATER RECHARGE AND MANAGEMENT

51.	Employing system approach on zero energy drip irrigation system in bench terrace farming for hill region. (NRMAIISWCCIL 201701400144)	Deepak Singh P.R. Ojasvi A.C. Rathore Devideen Yadav	Hydrology & Engineering, Dehradun	2017-18	2022-23 (To be concluded)	Research Farm & Udpalta village, Uttarakhand	Name of Dr Deepak Singh is added as PI. Dr A.C. Rathore and Dr Devideen Yadav may introduce suitable crops and management interventions immediately. Evaluate the functioning of the pump and solar system existing in the farm. Objective-wise presentation to be made. (Action: Dr Deepak Singh) **Progress grade: Very Good**

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
52.	Evaluation of direct recharge filter for revival of defunct and low yielding bore well vis-a-vis augmentation of ground water table in semi-arid region of Karnataka. (NRMAIISWCCIL 201701500145)	B.S. Naik Ravi Dupdal	Ballari	2017-18	2022-23 (To be concluded)	Molakalmur, Chitradurga district, Karnataka	Present data objective wise. Cost-effectiveness and efficiency of recharge pits (5 x 1.5 m and 3 x 3 m) may be explained and documented. Data on irrigation, cropping pattern, cropping intensity, water use efficiency and water productivity relationship may be collected and analysed. Measures to reduce rainfall dependence for recharge bore well may be included and analysed. Life of recharge filters, frequency of replacing/renovating layers of recharge filters etc. may be worked out. Document how recharge filters have helped in improving economic condition of farmers by analysing and comparing adopted *vs* non-adopted farmers/with and without interventions. Standard units may be used. Objective-wise presentation to be made. Previous year IRC comments not addressed fully and to be completed and presented. (Action: Dr BS Naik) **Progress grade: Good**
53.	Modelling of micro watershed using remote sensing and GIS. (NRMAIISWCCIL 202000800178)	Manoj Kumar Sharmistha Pal O.P.S. Khola	Chandigarh	2020-21	2025-26 (To be continued)	Research Mansa Devi	Name of Dr P.L. Bhutia is deleted. Previous modelling works may be referred and accounted. (Action: Dr Manoj Kumar) **Progress grade: Excellent**
54.	Evaluation of conservation technologies under CBT. **(NEW PROJECT)**	S. Patra Ramanjeet Singh Trisha Roy	H&E Division Dehradun	2022-23	2025-26	Research Farm, Selakui	Study should start from Rabi-2022. (Action: Dr Sridhar Patra)

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.

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
55.	Enhancing productivity of ravine lands by plantation of *A. sapota* with intercropping systems. (NRMACSWCRTICIL200801000023)	Gaurav Singh D. Dinesh Dinesh Jinger	Vasad	2008-09	2022-23 (To be concluded)	Research Farm, Vasad	Microbial analysis done and contribution of microbial mass may be assessed. (Action: Dr Gaurav Singh) **Progress grade: Excellent**
56.	Ecological restoration of stone mine spoil area in South-Eastern Rajasthan. (NRMAIISWCCIL 201502300109)	S. Kala H.R. Meena I.Rashmi Shakir Ali Ashok Kumar Gulshan Kumar	Kota	2015-16	2024-25 (To be continued)	Mine spoil sites in Kota district	Name of Dr B.L. Mina is deleted. Dr S. Kala is PI. In place of Jamun, *ficus reticulate* to be planted. Soil fertility analysis and inter-space management through inter-cropping may be carried out. Biomass in the plot should be recorded, may by fencing small area for the purpose of assessment. (Action: Dr S Kala) **Progress grade: Very Good**
57.	Impact assessment of Kota stone mine spoil on land use and cover changes and Environment. (NRMAIISWCCIL 202100300187)	Gulshan Kr. Sharma G.L. Meena Shakir Ali Kuldeep Kumar Ashok Kumar	Kota	2021-22	2023-24 (To be continued)	Kota mine areas	Name of Dr B.L. Mina is deleted. Depth of water samples and seasonal variability in groundwater quality may be assessed and shown on contour map. Water quality parameters may be compared with FAO and BIS standards for irrigation etc. Impacts of land use change on water quality be assessed. Microbial analysis may be considered. Heavy metals in soil-food-human flex may be ascertained. The data and findings should be documented and communicated to user-agencies and end-users. (Action: Dr Gulshan Kr. Sharma) **Progress grade: Very Good**

P-5 INTEGRATED WATERSHED MANAGEMENT FOR SOCIO-ECONOMIC GROWTH AND POLICY ADVOCACY

5.1 PARTICIPATORY WATERSHED MANAGEMENT AND INTEGRATED FARMING SYSTEM (IFS)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
58.	Economic impact assessment of water harvesting structure-Farm Pond in the semi-arid regions of Karnataka. (NRMAIISWCCIL 201800900157)	Ravi Dupdal B.S. Naik M.N. Ramesha Ravi K.N.	Ballari	2018-19	2022-23 (To be concluded)	Northern dry zone of Karnataka – Ballari and Vijayapur districts	Lot of analysis done which needs to be consolidated and expressed in terms of success and sustainability of Karnataka's farm pond schemes e.g. Policy recommendations. Success stories to be documented. Data per slide may be restricted. (Action: Dr Ravi Dupdal) **Progress grade: Very Good**
59.	Resource conservation practices for Doubling Farmers Income in North West Himalayas: An adaptive approach. (NRMAIISWCCIL 201901100170)	J.M.S. Tomar M.Muruganandam Gopal Kumar Ramanjeet Singh Indu Rawat P.R. Ojasvi Abhimanyu Jhajhria	Plant Science, Dehradun	2019-20	2023-24 (To be continued)	Navi-Sahiya, Udpalta	Name of Dr Abhimanyu Jhajhria added as Co-PI. Make unit of measurements uniform. Write two success stories. Constraints to achieving DFI or what factors/approach can increase probability of achieving DFI at farmer's field need to be an output of the project. (Action: Dr J.M.S. Tomar) **Progress grade: Good**
60.	Network project "Production systems, agribusiness and institutions" Component1: "Impact of agricultural Technology: Impact of watershed management in different agro-ecological regions. **(Collaborative Project & Externally Funded)**	Suresh Kumar (Upto April 2022) S.M. Vanitha (from April 2022) P. Sundarambal, Pradeep Dogra Indu Rawat Abhimanyu Jhajariya Ravi Dupdal Ashok Kumar R.S. Yadav R.K. Dubey Rajesh Bishnoi Gaurav Singh	Koraput Ooty Ooty Chandigarh Dehradun Dehradun Ballari Kota Datia Agra Koraput Vasad	2021-22	2024-25	Ooty, Headquarter and Research Centres	Name of Dr Suresh Kumar deleted. Name of Dr Sundarambal (Ooty) and Dr Abhimanyu Jhajhria (Dehradun) added. Uniform data collection and protocol may be adopted across the collaborating units/centres. (Action: Dr SM Vanitha)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
61.	Development and rejuvenation of natural springs through soil and water conservation measures. **(NEW PROJECT)**	Deepak Singh Charan Singh Rama Pal	H&E Division, Dehradun	2022-23	2024-25	Mid-Himalayan watersheds in Garhwal, Uttarakhand	Merge last two objectives. Conservation measures to be implemented immediately after visiting site, and planning for interventions. Considering the dense network and heavy flow expected, appropriate SWC measures- check dams, trenches, plantation etc. preferably local species in appropriate spacing may be planned and executed. The need of involvement of WIHG may be explored for collaboration. (Action: Dr Deepak Singh)
62.	Comprehensive Hydrologic Monitoring and Assessment for Science-Based Watershed Planning and Management in Selected Districts of Odisha Rejuvenating Watersheds for Agricultural Resilience through Innovative Development (REWARD) **(Externally Funded, World Bank funded Project,** DSC&WD, Government of Odisha**)** **(NEW PROJECT)**	M Madhu H.C. Hombegowda Ch. J. P. Dash Jotirmayee Lenka Rajesh Bishnoi ---------- Gopal Kumar U Mandal Sridhar Patra M Sankar	Koraput	2022-23	2024-25	Tribal belt of Orissa State	Funds may be utilized effectively including improving research infrastructure facilities at the Centre. Intensive monitoring of 2 model watersheds besides 10 monitoring watersheds may be taken up. Dr H C Hombegowda (Koraput) and Dr Gopal Kumar, Dr U Mandal, Dr Sridhar Patra and M Sankar (Dehradun) included. (Action: Dr M Madhu/ Dr H.C. Hombegowda)
63.	Promotion of Technologies for Quality Seed Production of Landraces of Paddy and Finger Millet in Koraput District, Odisha **Collaborative with MSSRF, Externally, DBT Funded, NEW PROJECT)**	H. C. Hombe Gowda Ch. J. P. Dash Jotirmayee Lenka Rajesh Bishnoi	Koraput	2022-23	2025-26	Tribal belt of Orissa State	Mixing of land races may be avoided by taking good care during mass selection and isolation. (Action: Dr H. C. Hombe Gowda)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
64.	Evaluation of agroforestry based Integrated Farming System under recommended practices for North-Western Himalayas. **(NEW PROJECT)**	Charan Singh A.C. Rathore M. Muruganandam Vibha Singhal M Sankar Uday Mandal	Plant Science Division, Dehradun	2022-23	2029-30	Research Farm, Selakui and farmers' fields, NW Himalayan foothills	Approved in IRC 2021. Fodder's impacts in yield may be calculated by appropriating fodders and concentrated feeds given and converting them into percentage use and yields. Needs of concentrated may be reduced by nutritive fodders. Fodder schedule/scheme as per availability/sources may be worked out. Appropriate agreement for fodder collection, use, management with the participating farmer(s) may be made. (Action: Dr Charan Singh)

P-6 HUMAN RESOURCE DEVELOPMENT AND TECHNOLOGY TRANSFER

65.	Impact assessment of database driven site-specific watershed management: A multi stakeholder analysis. (NRMAIISWCCIL 202100200186)	Ravi K.N. M.N. Ramesha Ravi Dupdal B.S. Naik	Ballari	2021-22	2023-24 (To be continued)	Sujala-III Project implemented districts of Karnataka	Uniform data collection and presentation to be made. Very well presented. (Action: Mr Ravi K.N.) **Progress grade: Excellent**
		S. M. Vanitha P. Sundarambal Hombegowda H.C. (Upto Aug. 2022)	Udhagaman-dalam				
66.	Assessment of performance of traditional water harvesting structure Jhola kundi in enhancing socio-economic status of tribals in Koraput district, Odisha. (NRMAIISWCCOL 202100800192) (**Externally Funded by RKVY, Project Director, Watershed,**	Ch. J.Dash H. C. Hombe Gowda M. Madhu Jotirmayee Lenka Rajesh Bishnoi	Koraput	2021-22	2023-24 (To be continued)	Koraput district	Efforts should be made to utilize budget effectively. Jholakund may be upscaled. Name of Dr D.C. Sahoo and Dr Suresh Kumar deleted. (Action: Dr Ch. J. Dash) **Progress grade: Very Good**

	Koraput)						
S. No.	**Title of the Project (Project Code / RPP No.)**	**Leader and Associates**	**Centre / Division**	**Start**	**Completion**	**Location of Project**	**IRC Comments**
67.	Farmer participatory technology application for sustainable resource management and livelihood security in North-West Himalayas. (NRMAIISWCCOL 201701700147) **(ICAR Scheme; Externally Funded)**	Bankey Bihari S.S. Shrimali M. Muruganandam Matber Singh Indu Rawat Trisha Roy Abimanyu Jhajhria	HRD&SS, Dehradun	2016-17	2022-23 (To be continued)	Raipur Block, Dehradun	Extended again for a year by the funding agency. Income and economic impact may be quantified with reference doubling farmers' income. Statistical tool may be used. Vermicomposting may be included. Rural livelihood mission considered. Name of Dr Abimanyu Jhajhria added. (Action: Dr Bankey Bihari) **Progress grade: Excellent**
68.	Establishment of biotech-KISAN Hub for aspirational districts of Eastern Plateau and Hills, and Western Hills. (NRMAIISWCCOL 202001000180) (**Collaborative with MSSRF, Externally, DBT Funded)**	H. C. Hombe Gowda Rajesh Bishnoi Jotirmayee Lenka M Madhu	Koraput	2020-21	2022-23 (To be continued)	Koraput, Rayagada & Malkangiri	Extended for a year. Name of Dr DC Sahoo and Dr Suresh Kumar deleted. Name of Dr H. C. Hombe Gowda added. Details and success of FPO (SHG) may be documented. Uniform standard units to be used. (Action: Dr H. C. Hombe Gowda) **Progress grade: Very Good**

6.2 PARTICIPATORY TECHNOLOGY DISSEMINATION AND ADOPTION

69.	Upscaling sustainable technological solutions and replicable models for ensuring food and nutrition, livelihood and social security of Scheduled Tribes in selected Gram Panchayats of Koraput district, Odisha. (NRMAIISWCCOL 202001100181)**(Collaborative with MSSRF, Jeypore,**	Ch. J. Dash M Madhu Jotirmayee Lenka Rajesh Bishnoi	Koraput	2020-21	2023-24 (To be continued)	Selected Gram Panchayat in Koraput district	Convert acre to hectare and use uniform standard units. Objective-wise presentation to be done. Name of Dr D.C. Sahoo and Dr Suresh Kumar deleted. Name of Dr M Madhu added. (Action: Dr Ch. J. Dash) **Progress grade: Very Good**

	Externally, DST Funded)						
S. No.	**Title of the Project (Project Code / RPP No.)**	**Leader and Associates**	**Centre / Division**	**Start**	**Completion**	**Location of Project**	**IRC Comments**
70.	Women empowerment through watershed development programmes in different agro-ecological regions of India **NRMAIISWCCOL 202100700191 (Inter-institutional Collaboration with ICAR-CIWA, BBSR)**	Indu Rawat Abhimanyu Jhajhria Vikas Yadav Ravi, K.N. Manoj Kumar Dinesh Kumar Gulshan Kr. Sharma Rajesh Bishnoi P. Sundarambal Dinesh Jinger --- Praveen Jakhar Sabita Mishra	Dehradun Agra Ballari Chandigarh Datia Kota Koraput Ooty Vasad --- ICAR-CIWA, Bhubaneswar	2021-22	2023-24	Dehradun and Research Centres	Name of Dr Suresh Kumar is deleted. Name of Dr. Abhimanyu Jhajhria, Dr Vikas Yadav and Rajesh Bishnoi are added at Dehradun, Agra and Koraput, respectively. Sites should be defined by agro-ecological region, particularly at Ooty. (Action: Dr Indu Rawat) **Progress grade: Very Good**
71.	Facilitating implementation and evaluation of Gram Panchayat based composite water resources management plan for climate adaptation in Tiruvannamalai District of Tamil Nadu for its adoptability and sustainability **(Collaborative Project with MSSRF, Thiruvannamalai, TN, NEW PROJECT)**	S. Manivannan SM Vanitha --- Rengalakshmi Nagaraj Pratheepa MSSRF, Thiruvanna-malai, TN	Udhagamandalam	2022-23	2024-25	Tiruvannamalai District, TN	Fund should be mobilized from Gram Panchayat, DRDA, MSSRF or any external sources for TA/DA and manpower. Output at panchayat level may be quantified and presented. (Action: Dr S Manivannan)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
72.	Demonstration of Agriculture Drone technology in different region of India under Agri-Drone Project **(Externally funded, ICAR-ATARI-Ludhiana funded, NEW PROJECT)**	M Sankar	SS&A, Dehradun	2022-23	2023-24	Selakui Research Farm and Research Centers	Modalities of using the drone for various agriculture activities and resource conservation interventions may be discussed, adopted and demonstrated. Improvement in the agri. operation, production, economics and conservation scenarios may be assessed using suitable attributes. (Action: Dr M Sankar and CoPI of the Research Centers)
		Vikas Yadav	Agra				
		M.N.Ramesha	Bellary				
		O.P. Premi,	Chandigarh				
		Dinesh Kumar	Datia				
		Jyotirmayee Lenka	Koraput				
		Ram A.Jat	Kota				
		P. Sudheer Kumar Annepu	Udhagaman-dalam				
		Dinesh Jinger	Vasad				

7.0 DETAILS OF NEW AND CONCLUDED PROJECTS
7.1 PROJECTS CONCLUDED DURING THE YEAR 2022

S. No.	Prog. No.	Title of the Project	Leader and Associates	Centre / Division	Year of Start	Location of Project	IRC Comments
1	2	3	4	5	6	7	8
73.	1.3	Land use effect on soil carbon stock and soil quality in Mahi ravine ecosystem of semi-arid tropics. (NRMAIISWCSIP 201700200132) (**Collaborative project with NBSSLUP**)	D. Dinesh Gaurav Singh Dinesh Jinger ---------- CCPI: P.C. Moharana Co-CCPI: Bagawati I. Tailor	Vasad	2017-18	Mahi ravines in Gujarat	Area of 70,000 ha will have large variation in soil (clay content) and slope affecting soil organic carbon content. Hence, homogenous unit may be made and such units compared for different land uses. Submit an externally funded project for next phase of the project covering rest of the ravine region, may be in collaboration with NBSSLUP, Nagpur. A Bulletin may be published. (Action: Dr D. Dinesh) **Progress grade: Excellent**
74.	2.1	Utilization of different industrially derived waste along with Arbuscular Mycorrhizal Fungi (AMF) for sustainable soil management. (NRMAIISWCCIL 201700600136)	Trisha Roy Uday Mandal Devideen Yadav	HRD&SS, Dehradur	2017-18	Research Farm, Dehradun	Water foot print and water use efficiency may be calculated. One page policy brief and a Bulletin of 5 to 10 page along with RPP III to be submitted. (Action: Dr (Ms.) Trisha Roy) **Progress grade: Excellent**

1	2	3	4	5	6	7	8
75.	2.1	Biochar for acid soil improvement and climate change mitigation in temperate ecosystem. (NRMAIISWCCOL201900600165) (DST funded)	K. Rajan P. Raja K. Kannan	Udhagamandalam	2019-20	Research Farm, Udhagamandalam	Carbon fractionation of different biochar materials to be done and compared. Calculate energy foot print for conversion of raw material to biochar. 2nd cycle of vegetable crop completed in June 2022. Complete the data analysis and discussion based on the consolidated data including the 3rd cycle begun in June 2022. Video and final report on biochar production may be produced and submitted. (Action: Dr K. Rajan) **Progress grade: Excellent**
76.	2.2	Fruit based multitier cropping system for livelihood security in Shivalik region. (NRMAIISWCCIL202000400174)	Ram Prasad Manoj Kumar Sharmistha Pal Dr P.L. Bhutia (upto Sep. 2021) Pradeep Dogra OPS Khola	Chandigarh	2020-21	Research Farm, Chandigarh	**Dropped due to poor technical program** (Action: Dr Ram Prasad)
77.	3.1	Hydrologic systems analysis across multiple spatial scales and its implications on hydro-logic processes in sub-humid catchment of Eastern Ghat High Land Region of Odisha. (NRMAIISWCCIL201501500101)	Ch. J. Dash	Koraput	2015-16	Watershed in Semiliguda block, Koraput	Publish a Bulletin. (Action: Dr (Ms.) Ch. J. Dash) **Progress grade: Excellent**
78.	3.2	Development and rejuvenation of natural springs through soil and water conservation measures. (NRMAIISWCSIP201501700103) **(Collaborative project with Wadia Institute of Himalayan Geology)**	Charan Singh Vibha Singhal U.K. Maurya Ambrish Kumar CCPI: S.K. Rai Co-CCPI: Vineet Kumar	Plant Science Dehradun	2015-16	Mid Himalayas in Garhwal region	Based on achievements of objective 1 and 2 the project concluded. Reason for more silting in trenching at Damata may be given. Standard units may be used. Progress of the project unsatisfactory. (Action: Dr Charan Singh) **Progress grade: Good**

1	2	3	4	5	6	7	8
79.	3.2	Developing dual purpose farm pond for water harvesting and ground water recharge in SAS Nagar, Punjab (NRMAIISWCCOL202000900179) (NABARD Funded)	Pankaj Panwar Sharmistha Pal O.P.S. Khola	Chandigarh	2020-21	SAS Nagar, Punjab	DSS developed may be shared with our stakeholders for feedback and improvement. Other software on ICAR-IISWC website can also be checked out for improvement. Caution is required while accounting parameters for computation of runoff/ peak rate of runoff. It would have been better to compute deviation in the value while compromising with the parameters. A technical manual and a user manual may be prepared and submitted. (Action: Dr Pankaj Panwar) **Progress grade: Excellent**
80.	5.1	Valuation of ecosystem services from natural resource conservation and management interventions in different agro-ecological regions in India. (NRMAIISWCCIL201801000158) **(Core Project)**	Pradeep Dogra D. Mandal Rajesh Kaushal Ramanjeet Singh S. Patra	PME Cell, Dehradun /Agra /Ballari/ Chandigarh/ Datia/Vasad /Koraput/Kota/ Udhagamandalam	2018-19	Developed watersheds / NRM intervention sites at Headquarters and Research Centres	Compare with success stories of Sukhomajri, Bunga and other old watersheds for eco-system services. Submit report by Sep., 2022. Publish a bulletin on DSS version 1.0. The output should suggest future research areas in assessment of ecosystem services affected by IWM. (Action: Dr Pradeep Dogra and leaders at Research Centres) **Progress grade: Excellent**
			K.K. Sharma S.K. Dubey R.K. Dubey RB Meena (from Oct.2021)	Agra			
			Ravi Dupdal B.S. Naik MN Ramesha M. Prabhavathi	Ballari			

			O.P.S. Khola Pankaj Panwar Sharmistha Pal OP Premi P.L. Bhutia (up to Sep.2021)	Chandigarh			
			R.S. Yadav	Datia			
			V.C. Pande Gaurav Singh Dinesh Jinger	Vasad			
			Suresh Kumar	Koraput			
			Ashok Kumar I. Rashmi Kuldeep Kumar S. Kala G.L. Meena	Kota			
			S. Manivannan V.K. Thilagam P. Sundarambal H.C. Hombegowda	Udhagamandalam			
81.	OT	Evaluation of olive cultivars for resource conservation and enhancing productivity of degraded lands.	Ram Prasad	Chandigarh	2021-22	Research Farm, Chd	Dropped due to poor performance of plantation. (Action: Dr Ram Prasad)

7.2 NEW PROJECTS APPROVED DURING IRC MEETING – 2022

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
1.	Evaluation of sorghum-based Agri-oleri systems for resource conservation and profit maximization in red soils of Bundelkhand	Dinesh Kumar R.S. Yadav D.M. Kadam	Datia	2022-23	2024-25	Research Farm of Datia Research Centre.	Bitter guard is advised in place of cluster bean. Reduce treatment upto 5-6 instead of 9 and intercropping suitably planned. (Action: Dr Dinesh Kumar)
2.	Re-composting of spent mushroom biomass for soil quality improvement and crop productivity enhancement.	S.K. Annepu K Kannan P Raja P Sundarambal SM Vanitha	Udhagamandalam	2022-23	2024-25	Research farm and farmer's fields of Udhagamandalam, Research Centre	Natural farming as one of the treatments in place of T-8 and the recommended (TNAU)/farmers practices may be included. Nutrient budgeting and economics accounting inputs and outputs, balancing and principles of circular economy and composting may be included. At least 10 farmers in TSP/SCSP villages may also brought under participatory experimentation and monitoring with data collection and analysis. Studies on carrot, potato and beans, density, spreading of roots, organic matter load may be included. (Action: Dr S.K. Annepu)
3.	Phyto-rehabilitation of saline-sodic Vertisols through *Prosopis pallida* based silvipastoral systems.	M.N. Ramesha M. Prabhavathi	Ballari	2022-23	2024-25	Research farm, Ballari Research Centre	Convert soil quality parameters into soil quality index for better understanding. Assess biomass production. The observations of the concluded OT may be compiled and submit a report. (Action: Dr M.N. Ramesha)
4.	Impact assessment of foliar nano N application on soil C:N ratio and C mineralization and its effectiveness on crop productivity	Trisha Roy Rama Pal Uday Mandal D. Mandal	HRD&SS Division	2022-23	2025-26	Research Farm Selaqui	Experimental plot size should be decided according to the availability of area. Start from *Rabi* 2022. (Action: Dr Trisha Roy)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
5.	Soil erosion, runoff and nutrient losses influenced by different types of vegetable crops and farming practices under Bundelkhand region	D. M. Kadam Dinesh Kumar R.S. Yadav	Datia	2022-23	2023-24	Research Centre Datia	Crop water requirement should be computed and matched with rainfall and how much can be supplied through life saving irrigation. Consider only four vegetables (instead of eight) for study with and without mulching and SWC practices, Experiment 1 is approved with and without mulching and 4 crops. Second experiment may be taken later based on experience of 1st experiment. (Action: Dr D. M. Kadam)
6.	Screening of tree species to be used as bioengineers for controlling soil erosion and slope stabilization under hilly ecosystem of north western Himalayas **(SERB-POWER Grant, DST)**	Vibha Singhal Charan Singh Rajesh Kaushal Trisha Roy	Plant Science Division, Dehradun	2022-23	2024-25	NW Himalayan watersheds in Garhwal	Appropriate spacing of trees as per site condition and architecture of canopy may be planned and included. (Action: Dr Vibha Singhal)
7.	Study of Carbon Footprint in Agricultural Land Use System from the Temperate and Tropical Ecosystem Western Ghats under Climate Change Scenario **(Inter Institutional Collaborative Project)** **Collaborating Centre : KSCSTE-CWRDM, Calicut, Kerala** **(DST Funded)**	P. Raja K. Kannan S.K. Annepu ---------- U. Surendran, KSCSTE-CWRDM	Udhagamandalam	2022-23	2024-25	Western Ghats in Tamilnadu	Standard protocol for assessment of CO_2 footprint and greenhouse gas emission reduction assessment may be prepared and used. Share them with PME cell. (Action: Dr P. Raja)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
8.	Development and rejuvenation of natural springs through soil and water conservation measures.	Deepak Singh Charan Singh Rama Pal	H&E Division, Dehradun	2022-23	2024-25	Mid-Himalayan watersheds in Garhwal, Uttarakhand	Merge last two objectives. Conservation measures to be implemented immediately after visiting site, and planning for interventions. Considering the dense network and heavy flow expected, appropriate SWC measures- check dams, trenches, plantation etc. preferably local species in appropriate spacing may be planned and executed. The need of involvement of WIHG may be explored for collaboration. (Action: Dr Deepak Singh)
9.	Effect of Natural Farming Practices on Resource Conservation and Productivity in different Agro Ecological Regions of India (Core project)	D. Dinesh Gaurav Singh Dinesh Jinger	Vasad	2022-23	2026-27	Vasad Research Centre, Headquarters and Centres of IISWC.	Workshop to be organised to finalize the location of study, detail of treatments plan, the cropping system factors and technical program for all the cooperating centres. Possibility for runoff and soil loss measurements may be explored and included in the study. Time replication for treatments and replication within plots for study parameters may be considered. Six treatments instead of 8, restricting to conventional and crop diversification may be considered. Possibility for external funding may be explored. (Action: Dr D. Dinesh and PI, Centres)
		Lekh Chand Trisha Roy Deepak Singh Rama pal	Dehradun				
		R. B. Meena K K Sharma R. K. Dubey Vikas Yadav	Agra				
		M.Prabhavathi B.S.Naik M.N.Ramesha Ravi Dupdal Ravi K.N.	Ballari				
		OP Premi Ram Prasad Sharmistha Pal	Chandigarh				
		K Rajan DM Kadam D Kumar	Datia				

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
		Jotirmayee Lenka Ch. J.P. Dash Rajesh Bishnoi	Koraput				
		Ram A Jat I. Rashmi G L Meena Ashok Kumar G. Kr. Sharma	Kota				
		K. Kannan P Raja S. Kr. Annepu S. M. Vanita P. Sundarambal	Udhgaman-dalam				
10.	National Mission on Sustainable Himalayan Ecosystem Project (2nd Phase): Agriculture Inter-Institutional collaborative project (Nodal Institute: ICAR-Central agroforestry Research Institute, Collaborative and externally funded, DST funded)	Gopal Kumar M. Madhu, Uday Mandal, Ramanjeet Singh, Rajesh Kaushal, Trisha Roy	Dehradun	2022-23	2024-2025	Indian Himalayan Region (IHR)	Impacts of extreme weather induced changes on agro-ecosystems and crop production and suitable strategies to increase crop production and income may be quantified in the study. (Action: Dr Gopal Kumar)
11.	Developing vegetation based technology for dust and erosion control along the National Highways (A collaborative and externally funded project by the National Highway Authority of India (NHAI) New Delhi)	Gopal Kumar Rajesh Kaushal, U Mandal Gulsan Sharma, Devideen Yadav	Dehradun	2022-23	2023-2024	Meerut–Delhi expressway, Uttar Pradesh, etc.	Suitable grass species and local hardy species identified and planned for plantation may be assessed for positive impacts. Negative impacts, if any may also be studied. (Action: Dr Gopal Kumar)

S. No.	Title of the Project (Project Code / RPP No.)	Leader and Associates	Centre / Division	Start	Completion	Location of Project	IRC Comments
12.	Evaluation of conservation technologies under CBT.	Sridhar Patra Ramanjeet Singh Trisha Roy	Dehradun	2022-23	2025-26	Research Farm, Selakui	Study should start from Rabi-2022. (Action: Dr Sridhar Patra)
13.	Evaluation of agroforestry based Integrated Farming System under recommended practices for North-Western Himalayas.	Charan Singh A.C. Rathore M. Muruganandam Vibha Singhal M Sankar Uday Mandal	Dehradun	2022-23	2029-30	Research Farm, Selakui and farmers' fields, NW Himalayan foothills	Fodder's impacts in yield may be calculated by appropriating fodders and concentrated feeds given and converting them into percentage use and yields. Needs of concentrated may be reduced by nutritive fodders. Fodder schedule/scheme as per availability/sources may be worked out. Appropriate agreement for fodder collection, use, management with the participating farmer(s) may be made. (Action: Dr Charan Singh)
14.	Comprehensive Hydrologic Monitoring and Assessment for Science-Based Watershed Planning and Management in Selected Districts of Odisha Rejuvenating Watersheds for Agricultural Resilience through Innovative Development (REWARD) **(Externally Funded, World Bank funded Project,** DSC&WD, Government of Odisha**)**	M Madhu H.C. Hombegowda Ch. J. P. Dash Jotirmayee Lenka Rajesh Bishnoi ---------- Gopal Kumar U Mandal Sridhar Patra M Sankar	Koraput	2022-23	2025-26	Tribal belt of Orissa State	Funds may be utilized effectively including improving research infrastructure facilities at the Centre. Intensive monitoring of 2 model watersheds besides 10 monitoring watersheds may be taken up. Dr H C Hombegowda and Dr Gopal Kumar, Dr U Mandal, Dr Sridhar Patra and M Sankar from Dehradun included. (Action: Dr M Madhu/ Dr H.C. Hombegowda)
15.	Promotion of Technologies for Quality Seed Production of Landraces of Paddy and Finger Millet in Koraput District, Odisha **Collaborative with MSSRF, Externally, DBT**	H. C. Hombe Gowda Ch. J. P. Dash Jotirmayee Lenka Rajesh Bishnoi	Koraput	2022-23	2024-25	Tribal belt of Orissa State	Mixing of land races may be avoided by taking good care during mass selection and isolation. (Action: Dr H. C. Hombe Gowda)

	Funded)						
S. No.	**Title of the Project (Project Code / RPP No.)**	**Leader and Associates**	**Centre / Division**	**Start**	**Completion**	**Location of Project**	**IRC Comments**
16.	Facilitating implementation and evaluation of gap based composite water resources management plan for climate adaptation in Tiruvannamalai District of Tamil Nadu for its adoptability and sustainability (Collaborative Project)	S. Manivannan SM Vanitha ---------- Rengalakshmi Nagaraj Pratheepa MSSRF, Thiruvannamalai, TN	Udhagamandalam	2022-23	2024-25	Tiruvannamalai District, TN	Fund should be mobilized from Gram Panchayat, DRDA, MSSRF or any external sources for TA/DA and manpower. Output at panchayat level may be quantified and presented. (Action: Dr S Manivannan)
17.	Assessment of variability and trend of climatic parameters at various time scales in different regions of India **(Core Project)**	Uday Mandal S S Shrimali S Ali S Manivannan K K Sharma B S Naik Jyotirmayee Lenka Gaurav Singh Manoj Kumar Dinesh Kumar	H & E Division, Dehradun/ Research Centres	2022-23	2027-28	Dehradun and Research Centres	Uniform data collection and analysis procedure may be finalised and used. ExcelStat: Multi-user software may be procured and used for analysis. Available previous database, analyses and documents may be referred and used to bring out a consolidated approach. Climatic and/or its variations may be analysed and situation-specific suitable guidelines and advisories based on the climate or its variation may also be prepared and disseminated to farmers and other stakeholders. (Action: Dr U Mandal and PI of research Centres)
18.	Network project "Production systems, agribusiness and institutions" Component1: "Impact of agricultural Technology: Impact of watershed management in different agro-ecological regions. **(Collaborative Project & Externally**	Suresh Kumar (Upto April 2022) S.M. Vanitha (from April 2022) P. Sundarambal, Pradeep Dogra Indu Rawat Abhimanyu Jhajhria Ravi Dupdal	Koraput Ooty Ooty Chandigarh Dehradun Dehradun Ballari Kota	2021-22	2024-25	Ooty/Koraput, Headquarter and Research Centres	Name of Dr Suresh Kumar deleted. Name of Dr Sundarambal (Ooty) and Dr Abhimanyu Jhajhria (Dehradun) added. Uniform data collection and protocol may be adopted across the collaborating units/centres. (Action: Dr SM Vanitha)

	Funded)	Ashok Kumar R.S. Yadav R.K. Dubey Rajesh Bishnoi Gaurav Singh	Datia Agra Koraput Vasad				
19.	Demonstration of Agriculture Drone technology in different region of India under Agri-Drone Project (Externally funded, ICAR-ATARI-Ludhiana funded, New Project)	M Sankar	SS&A, Dehradun	2022-23	2023-24	Selakui Research Farm and Research Centers	Modalities of using the drone for various agriculture activities and resource conservation interventions may be discussed and adopted. Improvement in the production, economics and conservation scenarios may be assessed using suitable attributes. (Action: Dr M Sankar and CoPI of the Research Centers)
		Vikas Yadav	Agra				
		M.N.Ramesha	Bellary				
		O.P. Premi,	Chandigarh				
		Dinesh Kumar	Datia				
		Jyotirmayee Lenk	Koraput				
		Ram A.Jat	Kota				
		P. Sudheer Kumar Annepu	Udhagaman-dalam				
		Dinesh Jinger	Vasad				

7.3 OBSERVATIONAL TRIALS APPROVED/EXTENTED FOR 2022-23

S. No.	Title of the Project	Leader & Associates	Centre/ Division	IRC 2022 Comments
1.	Development of medicinal plants based alternative land use for resource conservation on sloping lands.	Matber Singh Lekh Chand Trisha Roy	HRD&SS	Extended for one year as OT. (Action: Dr Matber Singh)

7.4 Project Proposals Conditionally Approved or Not Approved

S. No.	Title of the Project	Leader & Associates	Centre/ Division	Start	Completion	Location of Project	IRC Comments
1.	Evaluation of pit filling mixtures and plant growth regulators in *kagzi* lime under agri-horti system with green manure-mustard on reclaimed Yamuna ravines	R.K. Dubey Vikas Yadav R. B. Meena K. K. Sharma	Vasad/Kota/Agra	2022-23	2025-26	Ravine Research Centres	The project should benefit doubling farmers' income and Govt. Policy. Workshop may be conducted to bring out a core project involving three ravine Regional Centres; Vasad, Kota and Agra. Dr A.K. Singh will lead the workshop and the project. (Action: Dr RK Dube/Dr AK Singh)
2.	Impact Assessment of SWC and Watershed Management On Riverine Ecosystems	M Muruganandam Deepak Singh Rama Pal Sadikul Islam	Dehradun	2022-2023	2025-2026	Garhwal Himalayas	Submit for external funding (Action: Dr M Muruganandam)
3.	Monitoring and assessment of water quality *vis-a -vis* aquatic diversity in temporal and spatial cross section in tributaries of Upper Yamuna/ Ganga river systems of Uttarakhand	M Muruganandam Rama Pal Sadikul Islam Deepak Singh	Dehradun	2022-2023	2025-2026	Garhwal Himalayas	Submit for external funding (Action: Dr M Muruganandam)
4.	Soil Hydraulic characterization of prominent landuse systems in North-Western Himalayas	Sridhar Patra	Dehradun	2022-2023	2025-2026	Garhwal Himalayas	To be discussed in Next IRC-2023 (Action: Dr Sridhar Patra)

S. No.	Title of the Project	Leader & Associates	Centre/ Division	Start	Completion	Location of Project	IRC Comments
5.	Internet governance toolkit: A distributed internet of thins (IoT)'s Framework for information management in agriculture of things (AoTs), and Wild animal detection and alarm generation in Selaqui Farm of the ICAR-IISWC, Dehradun. **(Collaborative Project)**	Akshay Dheeraj Adarh Kumar (UPES)	H&E, Dehradun	2021-22	2023-24	Selaqui Farm	Approved when the collaborating and funding Agency finalise the program. (Action: Akshay Dheeraj)
6.	Development of integrated Annatto (*Bixa orellana*, L.,) based forage farming-cum-Apiary system for augmentation of livelihood security and resource conservation on non-arable lands in semi-arid regions. **(NASF)** **(Collaborative Project)**	S. Kala	Kota	2021-22	2025-26	Non-arable lands will be utilized as a site of experiment at Research Farm.	Approved when the collaborating and funding Agencies finalise the program. (Action: S Kala)

8.0 Actions Dropped (For Reference Only)

SN	Action Assigned	Status
1.	Action is again assigned by the IRC – 2020 that a Decision Support System (DSS) for generating optimal IFS plan of a farmer may be formulated by Dr Pradeep Dogra, Pr. Scientist (Ag. Eco.) and leader of concluded core project entitled "Multiple criteria decision for identifying suitable Integrated Farming Systems in different agro-ecological regions for optimizing resource conservation and productivity" for which detail listing of all the steps required for generation of an optimal IFS plan be done by March, 2021 based on which the outsourcing cost will be estimated. (Action: Dr Pradeep Dogra)	IFS-DSS: Monthly progress on standardisation of optimised IFS plan may revived and final report may be submitted.
2.	Uploading of ICT content developed, in the website (Action: Er SS Shrimali)	The ICT content for the SWC engineer is uploaded on the local host. The forestry content is being finalized in consultation with Dr Rajesh Kaushal. Hosting a website will be done on completion.
3.	Formation of core group on various disciplines for ICT content on technologies, systems and concepts developed by the Institute and development of relevant ICT contents (Action: Dr DV Singh, Er SS Shrimali, Dr Bankey Bihari and All Head of Divisions/ Centers)	Kota Centre: Core group has been formed to complete the assignment in consultation with the AKMU. Ooty: At centre level a committee has been constituted involving all the scientists from different disciplines. To develop the ICT content on new technologies.
4.	Submission/circulation of details of ecosystem services planned and to be included in projects of P-2.1 to all scientists, particularly to benefit PIs of P-2.2 projects (Action: Dr NK Sharma)	Discussed and a workshop may be organized.
5.	SOP for selection of location and size of ponds/RWH (Action: Dr PR Ojasvi & Er SS Shrimali)	As such no information is available on SOP for selection of location of pond. A committee of BIS is working on the standard for WHS.
6.	Preparation of videos on the technologies/interventions to enhance productivity of ravine lands (Action: Dr Shakir Ali)	Preparation of videos is under progress.

9.0 STATUS OF NUMBER OF PROJECTS

9.1 Details of Category-wise Projects

No. of projects in 2021-22	Projects concluded in 2021-22	New projects added in 2022-23	Total no. of projects in 2022-23
A	**B**	**C**	**D = A-B+C**
61	**8***	**19**	**72 = 61-8+19**

* Plus one OT concluded

9.2 Total Number of Projects in Different Research Programmes as Per IRC-2022

Research Programmes	P-1	P-2	P-3	P-4	P-5	P-6	Total
Total No. of Projects	11	35	08	03	07	08	**72**

10.0 APPENDICES

10.1. PROJECT EVALUATION AND RANKING ONGOING PROJECTS

A. Consolidated Details of the Grade

Theme	Grade (No. of Projects)			Total No.
	Excellent (≥ 80%)	Very Good (≥ 70% and <80%)	Good (≥ 60% and <70%)	
P1	9	1	0	10
P2.1	7	3	3	13
P2.2	4	9	2	15
P3	6	2	2	10
P4	1	2	0	3
P5	1	1	1	3
P6	2	4	0	6
Total	**30**	**22**	**8**	**60**
% Total	**50**	**37**	**13**	**100**

10.2. DIVISION/CENTRE-WISE NUMBER OF ONGOING PROJECTS

A. SERIAL NUMBER OF PROJECT(S) ONGOING AT DIFFERENT CENTERS/DIVISIONS*

S. No.	DIVISION / CENTRE	S. NO. OF ONGOING PROJECTS	TOTAL
1.	**Dehradun**		
	➢ Hydrology & Engineering	2,4,47,49,51,54,61	**07**
	➢ Soil Science & Agronomy	1,7,8,10,13,14,18,27,45,62,72	**11**
	➢ Plant Science	28,29,33,35,40,41,42,44,59,64	**10**
	➢ HRD&SS	17,22,25,26,30,39,60,67	**08**
	➢ PME Cell	5,6	**02**
	➢ National Fellow Programme	9	**01**
2.	Agra	7,10,26,60	**04**
3.	Ballari	7,10,15,26,34,43,52,58,60,65,72	**11**
4.	Chandigarh	7,10,16,26,35,38,53,60	**08**
5.	Datia	7,10,23,26,46,60,72	**07**
6.	Koraput	7,10,12,26,37,48,60,62,63,66,68,69,72	**13**
7.	Kota	7,10,19,21,26,31,36,56,57,60,72	**11**
8.	Udhagamandalam	3,7,10,11,24,26,35,50,60,65,71,72	**12**
9.	Vasad	7,10,20,26,32,35,55,60,72	**09**
		TOTAL	**114**

*** The list includes core projects with multiple PIs (Research Centre-wise/Division-wise)**

B. THE NUMBER OF PROJECTS WITH EACH INDIVIDUAL SCIENTIST OF THE INSTITUTE, AFTER THE IRC MEETING OF 2022

S. No	Name	Designation	Leader	Associate	Total	S. No. of project concluded
1.	Dr M. Madhu	Director	62	27,66,68,69	5	-
Hydrology & Engineering Division						
2.	Dr P.R. Ojasvi	Head of Division	47	4,5,10,39,51,59	7	-
3.	Er. S.S. Shrimali	Sr. Scientist (Com.App.)	-	2,5,47,67	4	-
4.	Dr S. Patra	Sr Scientist (Engg.)	49, 54	7,10,17,62	6	80
5.	Dr Uday Mandal	Scientist (Engg.)	2,4	6,13,25,27,45,62,64	9	74
6.	Er. Deepak Singh	Scientist (Engg.)	51,61	1,18,26	5	-
7.	Er. Saswat K. Kar	Scientist (Engg.)	---------- On Study Leave----------			
Soil Science and Agronomy Division						
8.	Dr N.K. Sharma	Head of Division	13	7,14,22	4	-
9.	Dr D. Mandal	ICAR-National Fellow	7,9	4,10,25,28	6	80
10.	Dr Gopal Kumar	Sr. Scientist (Soils)	10,27,45,62	4,6,14,59	8	-
11.	Dr M. Sankar	Scientist (Soils)	1,8,72	22,33,42,49,62,64	9	-
12.	Dr Ramanjeet Singh	Scientist (Agro.)	10,13,14	27,49,54,59	7	80
13.	Dr Devideen Yadav	Scientist (Agro.)	18	30,45,51	4	74
Plant Science Division						
14.	Dr Charan Singh	Head of Division	64	44,61	3	78
15.	Dr J.M.S. Tomar	Pr. Scientist (Forestry)	41,59	28,35,40	5	-
16.	Dr A.C. Rathore	Pr. Scientist (Hort.)	33,42	29,30,51,64	6	-
17.	Dr Rajesh Kaushal	Pr. Scientist (Forestry)	28,35,40	10,27,41,45	7	80
18.	Dr J. Jayaprakash	Sr. Scientist (Forestry)	29	42,30	3	-
19.	Dr (Ms.)Vibha Singhal	Pr. Scientist(Agro-For.)	44	30,64	3	78
20.	Mr. A.K. Gupta	Scientist (Envt. Sc.)	---------On Study leave----------			
Human Resource Development and Social Science Division						
21.	Dr D.V. Singh	Head of Division	30,39	17,18,28,29,33,35	8	-
22.	Dr Bankey Bihari	Pr. Scientist (Agril.Extn.)	67	-	1	-
23.	Dr Lekh Chand	Pr. Scientist (Agro.)	17,22,26	8	4	-
24.	Dr Matber Singh	Sr. Scientist (Agrofor.)	-	39,67	2	-
25.	Dr (Ms.) Trisha Roy	Scientist (Soils)	25	10,13,26,40,44,54,67	8	74
26.	Dr (Ms.) Indu Rawat	Sr Scientist (HM/FRM)	70	59,60,67	4	-
27.	Dr Abimanyu Jhajhria	Scientist (Agril.Eco.)	-	59,60,70	3	-
Prioritization, Monitoring and Evaluation Cell						
28.	Dr M. Muruganandam	OIC (PME Cell)	-	59,64,67	3	-
29.	Dr Rama Pal	Scientist (Envt. Sc.)	-	13,25,26,35,61	5	-
30.	Dr Sadikul Islam	Scientist (Ag. Stat.)	5,6	7,28,35	5	-
Research Centre, Agra						
31.	Dr K.K. Sharma	Head of Centre	7	2,10,26	4	80
32.	Dr R.K. Dubey	Sr. Scientist (Agro.)	-	7,26,60	3	80
33.	Mr. R.B. Meena	Scientist (Soils)	10,26	7	3	80
34.	Dr Vikas Yadav	Scientist (Fruit Sci.)	72	10, 26,70	4	-
Research Centre, Ballari						
35.	Dr B.S. Naik	Head of Centre	52	2,7,10,26,58,65	7	80
36.	Mr. M.N. Ramesha	Scientist (Forestry)	15,43,72	10,26,34,58,65	8	80
37.	Dr. M. Prabhavathi	Scientist (Soils)	7,10,26,34	15,43	6	80
38.	Mr A.S. Morade	Scientist (Hort.)	----------Study Leave----------			
39.	Dr Ravi Dupdal	Scientist (Ag. Eco.)	58	26,52,60,65	5	80
40.	Mr Ravi K.N.	Scientist (Ag. Extn.)	65	15,26,58,70	5	-

S. No	Name	Designation	Leader	Associate	Total	S. No. of project concluded
Research Centre, Chandigarh						
41.	Dr O.P.S. Khola	Head of Centre	-	10,35,38,53	4	76,79,80
42.	Dr Pradeep Dogra	Pr. Scientist (Ag. Eco.)	-	16,28,38,60	4	76,80
43.	Dr Ram Prasad	Pr. Scientist (Hort.)	16	26	2	76,81(OT)
44.	Dr Pankaj Panwar	Pr. Scientist (Forestry)	35	10,38	3	79,80
45.	Dr(Ms.)Sharmistha Pal	Scientist (SS) (Soils)	7,10	26,35,38,53	6	76,79,80
46.	Dr Manoj Kumar	Scientist (Engg.)	38,53	2,70	4	76
47.	Dr O.P. Premi	Scientist	26,72	16	3	80
Research Centre Datia						
48.	Dr R.S. Yadav	Head of Centre	-	7,10,23,46,60	5	80
49.	Dr K. Rajan	Pr. Scientist (Soils)	7,26	-	2	75
50.	Mr. D.M. Kadam	Scientist (Hort.)	46	23,26	3	-
51.	Mr. M.K. Meena	Scientist (Ag. Eco.)	----------Study Leave----------			
52.	Dr Dinesh Kumar	Scientist (Agro.)	10,23	2,7,46,70	5	-
Research Centre, Koraput						
53.	Dr Hombegowda H.C.	Head of Centre	35, 63	10,62,65, 66, 68	7	80
54.	Dr (Ms.) Ch. J. Dash	Scientist (Engg.)	7,66,69	26,37,48,62,63	8	77
55.	Dr Rajesh Bishnoi	Scientist (Agril. Extn.)	-	26,37,60,62,63,66,68,69, 70	9	-
56.	Dr Jotirmayee Lenka	Scientist	10,12,26, 37,48,72	2,62,63,66,68,69	12	-
Research Centre, Kota						
57.	Dr Ashok Kumar	Head of Centre	-	10,19,21,26,36,56,57,60	8	80
58.	Dr Shakir Ali	Pr. Scientist (Engg.)	-	2,10,19,21,36,47,56,57	8	-
59.	Dr H.R. Meena	Sr. Scientist (Hort.)	36	31,56	3	-
60.	Dr Ram A. Jat	Pr. Scientist (Agro.)	21,26,72	10	4	-
61.	Dr G.L. Meena	Scientist (Soils)	10	7,26,56,57	5	80
62.	Dr Kuldeep Kumar	Scientist (Agro.)	7,19	36,57	4	80
63.	Dr (Ms.) S. Kala	Scientist (Forestry)	31,56	10	3	80
64.	Dr (Ms.) I. Rashmi	Scientist (Soils)	-	19,21,26,31,36,56	6	80
65.	Ms. Anita Kumawat	Scientist (Agro.)	----------Study Leave----------			
66.	Dr Gulshan Kr. Sharma	Scientist (Envi. Sci.)	57	7,21,26,45,70	6	-
Research Centre, Udhagamandalam						
67.	Dr K. Kannan	Head of Centre	7,26	3,10,11,24,35,50	8	75
68.	Dr S. Manivannan	Pr. Scientist (Engg.)	10,71	2,35,50	5	80
69.	Dr (Ms) P. Sundarambal	Pr. Scientist (Ag. Ext.)	70	24,26,60,65	5	80
70.	Dr P. Raja	Pr. Scientist (Soils)	3,11,50	7,24,26	6	75
71.	Dr SM Vanitha	Scientist (Agri. Eco.)	60, 65	7,24,26, 71	6	-
72.	Dr Sudheer Kr. Annepu	Scientist (Veg. Sci.)	24,72	3,11,26	5	-
Research Centre, Vasad						
73.	Dr A.K. Singh	Head of Centre	-	7,20	2	-
74.	Dr D. Dinesh	Scientist (Soils)	7, 10,20,26	32,35,55	7	73
75.	Dr Gaurav Singh	Scientist (Engg.)	55	2,10,26,32,60	6	73,80
76.	Dr Dinesh Jinger	Scientist (Agro.)	32,35,72	7,10,20,26,55,70	9	73,80