PREAMBLE BY THE CHAIRMAN

The Director, CSWCRTI, Dehradun and Chairman of Institute Research Committee (IRC) welcomed the Heads of the Centres/Divisions and scientists to IRC Meeting-2009. He informed the house that the IRC Meeting was being held one month earlier to enable the Heads and scientists to complete the pending assignments of 2009-10 within the stipulated period, and reorganize and reorient research activities as per prioritized researchable issues in the forth coming year.

As in the previous years, the Chairman informed the house about the various awards and recognitions won by the scientists of the Institute during the year. Dr. V.N. Sharda, Director was awarded Fellowship of the Institution of Engineers (India) for the year 2009 for outstanding contributions in the field of Agricultural Engineering. Dr. K.S. Dadhwal, Head (SS&A) was conferred upon the Fellowship Award of Hind Agri-horticultural Society for the year 2008. Dr. O.P. Chaturvedi, Head (Plant Science) was presented Recognition Award of National Academy of Agricultural Sciences for the biennium 2007-08 for his contributions in the field of Soil, Water and Environmental Sciences. Dr. Sharmistha Pal, Scientist (Soils) of the Research Centre, Chandigarh was awarded Dr. S.P. Raychaudhuri Gold Medal (2008) by the Indian Society of Soil Science for her Ph.D thesis. Dr. D.V. Singh, Senior Scientist (Soils) and Dr. K. Kannan, Senior Scientist (Agronomy) of Research Centre, Udhagamandalam were awarded the Dr. Norman E. Borlaug International Agricultural Science and Technology Fellowship (2008) in the field of Water Management by the United States Department of Agriculture (USDA). Dr. P.P. Adhikary, Scientist (Soils) of Research Centre, Datia received Jawaharlal Nehru Award for outstanding Post-Graduate Agriculture Research (2008) in the field of Soil Science by the ICAR. Dr. B.L. Dhyani, Head (HRD&SS) and Dr. R.S. Kurothe, Head (Vasad) were awarded Fellowships for the year 2009 by the Indian Association of Soil and Water Conservationists (IASWC). Dr. A.K. Tiwari, Head, CSWCRTI, Research Centre, Chandigarh and Dr. A. Raizada, Head, CSWCRTI, Research Centre, Bellary won Gold Medals of IASWC for the year 2009. The Chairman and the whole of IRC lauded these achievements and recognitions.

Briefly mentioning the important events of the Institute in the current year, the Chairman informed the gathering that a meeting attended by 16 delegates from the member countries of the South Asian Association for Regional Cooperation (SAARC), except Pakistan, was organized in the Institute wherein a number of issues related to natural resource management were discussed. In continuation with the past conferences organized in different regions, a conference on 'Food and Environmental Security through Resource Conservation in Central India: Challenges and Opportunities (FESCO-2009)' was organized by IASWC (Dehradun) and Research Centre (Agra) in collaboration with Department of Land Development & Water Resources, Government of Uttar Pradesh at Agra for Central region covering 5 states.

The Chairman also informed the house that the Institute has been recently recognized by the Government of Uttarakhand as a Nodal Agency for conducting Senior Level Officers Courses on Integrated Watershed Development and Natural Resource Management. Consequently, a one day workshop was organized at Institute Headquarters for Secretaries and Head of Departments of Uttarakhand Government. Similar training courses were also organized by the Institute Research Centres at Chandigarh, Udhagamandalam and Vasad.

One of the major achievements of the Institute was the publication of technology brochures covering 33 potential technologies by the Institute Headquarters and eight Research Centres. To apprise the Officers of State Govt. departments, NGOs and progressive farmers about these technologies, nine Sensitization Workshops were organized by the Headquarters and eight Research Centres of the Institute. Field visits were also conducted for the participants. The Chairman emphasized that the Centres/Divisions must now pursue the concerned state agencies for transfer of these technologies to farmers' fields of their regions. Further, under Transfer of Technology programme of the ICAR, the Institute has received a budget of Rs. 40 lakhs to be utilized by March, 2012, with Rs. 4.0 lakhs earmarked for each Research Centre as well as Headquarters, during the current financial year. Out of this amount, Rs. 15 lakhs is to be utilized in 2009-10 by the whole Institute. Utilizing this fund, the Heads must demonstrate these technologies, as well as other potential

technologies, of their Centres/Divisions as a complete package in villages located near the Research Farms of the Headquarter/Centres, as the impact of demonstrations should be visible on farmers' fields than on Research Farms. The demonstrations should be systematically implemented and meticulously monitored for feedback from the farmers so that necessary modifications as per the need may be made for successful adoption of the technologies in future.

In addition to the above, a budget of Rs. 140 lakhs is available with the Institute for undertaking research related activities such as development of integrated farming systems, establishment of meteorological observatories, construction of gauging stations in the selected NWDPRA watersheds, construction of runoff plots, procurement of equipment, and other research and development activities. Out of the total amount, Rs 15 lakhs has been earmarked for each Research Centre and Rs. 20 lakhs for the Headquarters for the period upto March, 2012. For the remaining period of the XI Five Year Plan, therefore, sufficient funds are available for research and extension activities of the Institute. The Chairman stressed upon generation of high quality research data from future research endeavours, in addition to already available voluminous computerized research data available at all the Research Centres and Headquarters of the Institute, which should be made use of by scientists, who have worked in the projects and have rich research experience for bringing out research papers in international and national journals having high impact factor. This is also one of the recommendations of the RAC-2009. Reinforcing another recommendation of the RAC-2009, the Chairman opined that the research work conducted under the projects should not only be for quality publications in reputed journals but also should bring out useful recommendations which ultimately can be implemented / are accepted by the farming community.

The Chairman informed the house that the Institute Headquarters has initiated RS/GIS based impact assessment of Ashti watershed (presently being developed as model watershed under NWDPRA scheme by the Institute) in collaboration with Indian Institute of Remote Sensing (IIRS), Dehradun. This will be in addition to the conventional field survey based impact assessment. Once the methodology for impact assessment is finalized, it will also be applied to other such model watersheds being developed in different regions of the country by the Research Centres of the Institute.

The Chairman concluded his address by informing the house about the recent new initiatives undertaken by ICAR. The Council is implementing Project Based Budgeting (PBB) in several of its Institutes including CSWCRTI. Under PBB, a holistic approach, a fixed but complete budget (excluding salary) is exclusively assigned to a project, as done in externally funded projects such as of NATP and NAIP. A project account is maintained and monitored for expenditure made by the project leader, who is assigned responsibility as well as powers for spending the allocated budget as per listed milestones. The Institute will also initiate PBB of all new projects approved in IRC-2009. Another initiative undertaken by ICAR is the Contingency Planning against failure of agriculture crops at national level due to natural disasters such as droughts, floods, cold wave, climatic aberrations etc. A format for generating district level basic data is being finalized at national level under the umbrella of NARS. Data shall be collected from state departments and super imposed with technical data for generating district level contingency plans to achieve assured crop yields during natural calamities.

RECOMMENDATIONS OF RAC – 2009

The RAC made in-depth review of different on-going projects through the presentations by the Programme Implementers. It also examined the related documents and visited the Indian Institute of Remote Sensing, Dehradun. The RAC made the following specific recommendations:

1. RAC appreciated the efforts of the Institute to document the potential technologies developed by the Institute and other publications in Journals of national and international repute. The RAC stressed that the scientists should analyze the research data carefully in order to enhance its applicability in regional and national planning for sustainable agricultural production as well as its acceptability in research journals having high impact factor. The RAC reminded that a similar recommendation was also made in the previous meeting.

2. RAC opined that the resources identification and quantification and their competition with prevalent agricultural systems should be ensured prior to implementation of any experimental treatment. It was further emphasized that the availability of input resources and consumption of system produces should be kept in mind while preparing a project.

3. RAC again appreciated the participatory development of water conveyance system for creating an irrigation facility at the farmers' fields of Pasauli village (Block: Vikasnagar; Distt. Dehradun) under TDET (MoRD) Project. The RAC stressed that such activities need to be expedited in order to develop model irrigation systems which would greatly enhance the productivity at farm level and generate farm based employment. If necessary, awareness on the importance of the project may be created with the help of the media.

4. The RAC recommended that the criteria for application of in-organic and organic fertilizers should be kept in view by following INM approach and consumption pattern in a given region befitting the economic conditions of resource poor farmers.

5. RAC was deeply impressed with the excellent collaboration which has been initiated between Indian Institute of Remote Sensing (IIRS), Dehradun and Central Soil and Water Conservation Research and Training Institute (CSWCRTI), Dehradun. The RAC recommended that the procedure developed and standardized for Ashti watershed employing RS & GIS technologies in delineation, characterization, mapping & scaling, and monitoring & evaluation of the watersheds should be uniformly applied in all the nine model watersheds undertaken by CSWCRTI, Dehradun.

6. RAC was happy that the Institute is already engaged in evolving a decision rule for implementation of the treatment measures in various types of degraded lands on the basis of potential soil erosion rates and soil loss tolerance limits under existing landuse systems in different Agro-Ecological Zones (AEZ) of the country. The RAC suggested that such information should be compiled into a bulletin and published for wider circulation among implementing agencies across the country.

7. RAC observed that Integrated Farming System (IFS) needs major review with regard to adoption of crops and their varieties under water scarce conditions. In such regions, oil seeds/legumes based cropping systems should be suggested/planned with recommended variety of crops for a given rainfed region. Before introducing new cropping sequences in such regions, farmers should be convinced about the spectacular benefits obtained for shifting over from the traditional wheat based systems.

8. RAC appreciated the efforts taken by the CSWRTI for the dissemination of conservation technologies by the Institute and recommended that Institute should strengthen the system of transfer of technologies which are developed at the Centres and headquarters of the Institute, for achieving higher adoption efficiency among all categories of farmers.

SALIENT RECOMMENDATIONS OF IRC MEETING – 2009

1. Recommendations regarding MMA (NWDPRA) watersheds activities are as under :

i. Ashti watershed, Dehradun

- The PI has committed to utilize the un-utilized budget of 2008-09 and 2009-10 by March, 2010 after completing all the codal formalities.

(Action: PI, Ashti watershed)

ii. Jalalpur watershed, Agra

- The left over activities of 2008-09 should be completed by the PI and his team along with all activities of 2009-10 by March, 2010, excluding activities pertaining to agro-forestry.
- The PI is advised to make all efforts to complete the activities as per the DPR in future.

(Action: PI, Jalalpur watershed)

iii. Ramasagara watershed, Bellary

- Dr. A. Raizada, Head, Research Centre, Bellary would be associated in the project.
- Registration of the Watershed Society of Ramasagara Watershed would be done by 10th December, 2009.
- All activities under the Work Phase would be completed by 20th March, 2010.
- A total of Rs. 13 lakhs would be utilized by the Research Centre by March, 2010.

(Action: PI, Ramasagara watershed)

iv. Kajiana watershed, Chandigarh

- Under work phase out of remaining Rs. 12 lakhs, Rs. 9.5 lakhs should be utilized in Work Phase and the remaining Rs. 2.5 lakhs on Livelihood Support System / Production System and Micro-enterprises.

(Action: PI, Kajiana watershed)

v. Jigna watershed, Datia

- The Watershed Committee could not be constituted till November, 2009, which has been highly disappointing and viewed very seriously by the house.
- Works i.e. construction of water harvesting strucute, percolation check dam, repair of existing stop dam, construction of check dam and farm pond should be completed by March, 2010 so that the funds of Rs. 9.25 may be utilized under NWDPRA scheme.

(Action: PI, Jigna watershed)

vi. Lachhaputra Ghati watershed, Koraput

- The budget (Rs. 1.17 lakhs) under the head Preparatory Phase – Capacity Building should be utilized by February, 2010.
- Unutilized budget of Rs. 11.5 lakhs under Work Phase activities (farm pond, renovation of WHS, check dams, gully control structure, dugout pond) Livelihood Support System, Production System and Micro enterprises etc. should be utilized by March, 2010.

(Action: PI, Lachhaputra Ghati watershed)

vii. Dhoti watershed, Kota

- The unutilized budget (Rs. 1.16 lakh) should be utilized by March, 2010 for Preparatory Phase activities, viz; Entry Point Activity (repair of village temple) and Capacity Building Activity (training programme for user groups).
- Under Work Phase activities, estimate for pond and anicut should be revised for constructing 3 small ponds instead of a single large pond. The proposal may be submitted to the Headquarters after completing the codal formalities immediately so that work may be completed by March, 2010.

(Action: PI, Dhoti watershed)

viii. Ayalur watershed, Udhagamandalam

- PI and Head have committed that Preparatory Phase budget would be fully utilized by March, 2010.
- Out of total allocation of Rs.30.76 lakhs for Preparatory Phase and Work Phase only Rs.6 lakhs were utilized. Head and PI assured that additional amount of Rs. 15 lakhs shall be utilized by March, 2010. The remaining amount (Rs. 9.76 lakhs) as spill over of 2009-10 shall be spent during 2010-11.

(Action: PI, Ayalur watershed)

ix. Vejalpur-Rampura watershed, Vasad

- Preparatory Phase Activities (EPA and Capacity Building) should be completed by March, 2010 so that remaining budget under Preparatory Phase is fully utilized.
- Commitment of utilization of Rs. 7.5 lakhs by March, 2010 for Work Phase activities (peripheral bund, trenches, earthen gully plug, water harvesting check dam, recharge filter and for goat rearing unit etc.) has been given by the Head of the Research Centre. In this respect codal formalities should be completed by Dec. 2009 and request for drawl of advance may be sent immediately.

(Action: PI, Vejalpur-Rampura watershed)

2. Dr. G.P. Juyal, Head, H&E Division is nominated as Nodal Officer for collaboration with Indian Institute of Remote Sensing (IIRS) to implement and evaluate nine model watersheds through RS/GIS technique operating at Headquarters and all Research Centres after developing suitable methodology for Ashti watershed.
(Action: Dr. G.P. Juyal/ Er. S.S. Shrimali and PIs of model watersheds at Research Centres)

3. Half page note for each season of FPRAP demonstration and one para note for each technology of each season in prescribed format should be submitted by all Research Centres and Divisions.
(Action: PIs/all Heads of Research Centres / Divisions)

4. A script of FPARP demonstrations, general activities and salient achievements of Research Centres / Divisions may be prepared by each Centre and Division by Jan. 31, 2010 for making a documentary film. Head, HRD&SS Division is nominated as Nodal Officer to co-ordinate and complete the assignment.
(Action: All Heads of Research Centres/Divisions and Head, HRD&SS Division)

5. Dr. D.R. Sena, Sr. Scientist (Engg.) should analyse the structure-wise recharge data for the core project on "Ground Water Recharge". Dr. D.R. Sena and Dr. R.S. Kurothe should check the status of submission of required data and find the gaps and inform accordingly all Co-PIs by Dec. 15, 2009. All Co-PIs of this core project working at Research Centres Chandigarh, Datia, Kota, Koraput, Bellary and Udhagamandalam should visit Vasad Centre for completing the analysis and interpretation of entire data in the second fortnight of Jan., 2010. A final workshop may be organized in April, 2010 for presentation of all analysis / results related to this core project.
(Action: Dr. D.R. Sena, Dr. R.S. Kurothe and Co-PIs of Ground Water Recharge core project at Chandigarh, Datia, Kota, Koraput, Bellary and Udhagamandalam)

6. Procedure for computation of soil threat index may be standardized by Dr.(Ms.) Sharmistha Pal and communicated to all Heads of the Research Centres and Divisions by Jan. 31, 2010. Techniques for collecting data on emission of CO_2 and microbial activity may be provided by Dr. O.P. Chaturvedi and on aggregate stability by Dr. Sharmistha Pal to all Heads of the Research Centres / Divisions by 31st January, 2010. Data of all nine parameters may be collected by all Research Centres and Divisions in the ongoing projects and soil threat index may be computed and submitted to Dr. Sharmishta Pal for presentation in next IRC meeting.
(Action: Dr. Sharmistha Pal, Dr. O.P. Chaturvedi and all Scientists/Heads of Research Centres/Divisions)

7. Monthly Progress Reports (MPRs), which are being submitted by H&E Division and Research Centres, Koraput, Vasad, Datia and Bellary are not up to the mark. The reporting should be well planned and submitted in a quantifiable manner with economics. Dr. G.P. Juyal, Dr. K.P. Gore, Dr. R.S. Kurothe, Dr. S.P. Tiwari and Dr. A. Raizada should check it properly before it is submitted to the competent authority.

(Action: Dr. G.P. Juyal, Dr. K.P. Gore, Dr. R.S. Kurothe, Dr. S.P. Tiwari and Dr. A. Raizada)

8. The need for bringing quality publications out of the ongoing and concluded projects is essential for scientists particularly for Principal Scientists and Senior Scientists. Each scientist must endeavour to publish at least two research papers in reputed journals having high score as per NAAS ratings, every year with preferably one as international papers. Head of Research Centres / Divisions should promote this culture and ensure quality publications in future, which is an important indicator for the performance of individual scientists or the Institute as a whole as per AAR proforma.

(Action: All Scientists/Heads of Research Centres and Divisions)

9. A core project on trenching may be formulated by Dr. R.S. Kurothe by Dec., 2009 on degraded lands with respect to different landuse systems including horticulture, agriculture and silvipastoral systems.

(Action: Dr. R.S. Kurothe, Head, Research Centre, Vasad)

10. Heads of Research Centres/Divisions should be fully acquainted with methodology and progress of each and every ongoing projects of the concerned Research Centre / Division for smooth running of the projects and providing guidance to the concerned project leaders.

(Action: All Heads of Research Centres / Divisions)

ACTION TAKEN ON
"SALIENT RECOMMENDATIONS OF IRC MEETING – 2008"

S.No.	Action Assigned	Action Taken Report
1.	Recommendations regarding FPARP activities are as under:	
a.	While reporting technologies of Farmers Participatory Action Research Programme (FPARP), the Water Use Efficiency (WUE) unit should uniformly be kept as kg/ha/mm. For maintaining uniformity in computation of WUE, the procedure submitted to all Research Centres by Dr. D.R. Sena may be adopted. Computed WUE of each demonstrated technology package should be submitted by all Heads by Jan.10, 2009. **(Action: All Heads of Research Centres/Divisions)**	The Water Use Efficiency unit of the technologies for the Rabi (2008-09) has been uniformly adopted by all Research Centres/ Divisions as kg/ha/mm. Procedure given by Dr. D.R. Sena is being adopted by all.
b.	Each centre at the end of each season (for *Kharif* – by November; for Rabi – by May) must submit a summary (one para) of each demonstrated technology. Also, a half page summary of all technologies together for each season must be submitted. **(Action: All Heads of Research Centres/Divisions)**	Summary of technologies of Rabi season has been submitted by Research Centres, Agra & Chandigarh and Division of SS&A. However, it has been assigned to all Research Centres/ Divisions for submission of one para note for each technology for each season alongwith half page summary for all technologies together for FPARP demonstration.
c.	Estimation of total cost of cultivation per hectare at any centre for a crop must be uniform, as far as possible, by using same rates for various inputs and operations. Any variation in the estimation must be attributable to variation in the inputs/operations and their quantities. **(Action: All Heads of Research Centres/Divisions)**	It is being followed-up accordingly by all Research Centres/Divisions.
d.	Contribution of farmers in the demonstrated technology packages must be substantially realized in subsequent cropping seasons. **(Action: Head of Agra Centre)**	Action has been compiled by the Head of Agra Centre.
e.	Since Bellary has only one cropping season, the centre may utilize the FPARP funds by demonstrating cost intensive interventions such as ponds, micro irrigation systems, trenching etc. after approval of the competent authority. **(Action: Head of Bellary Centre)**	The funds are being utilized accordingly by the Head of Bellary Centre.
f.	Each technological demonstration should be taken preferably on a plot of 1 ha area in a village, except in hilly region where land holdings are small. In such situation, the technology may be demonstrated on large number of plots of the same village by not exceeding the total area of 1 ha as per norms fixed by MoWR. Additional net returns per ha due to the water saved may be computed in case of wheat crop. **(Action: Head of Chandigarh Centre)**	Each technology demonstration has been taken preferably on 1 ha of land. However, two to three farmers have been clubbed due to small land holdings. Additional net returns due to water saved have been computed for wheat crop.
2.	Climate change analysis / impact must be a part of every project of the Institute. Er. K.P. Tripathi, Principal Scientist may prepare a list of parameters for collection of data relevant to climate change from ongoing as well as all future projects and send the list to all Research Centres/Divisions by March 15, 2009 for collecting the data and linking it with hydrology and agricultural productivity for presenting in the IRC meeting. Meanwhile, one page note on climate change impact on runoff/soil loss/crop yield etc. of ongoing projects may be submitted by all Research Centres/Dvisions by Feb. 15, 2009. Any outcome of on-going projects on climate change may be submitted to Er. K.P. Tripathi in future by all Research Centres/Divisions for its analysis and onward transmission to council or higher authority. **(Action: Er. K.P. Tripathi and Leaders of all projects)**	One page note on climate change impact of on-going projects has been submitted by Research Centres / Divisions. The information received by Er. K.P. Tripathi from Research Centres / Divisions was presented during the presentation of NPCC funded on-going project on climate change.

3.	Final document of potential technologies must be submitted by Research Centres Datia and Koraput by January 20, 2009 positively. The technologies should be thoroughly checked by the Head of Research Centres/Divisions while submitting. As 3000 copies are to be published, the responsibilities for mistakes will lie to the Head of Research Centres/Divisions. All technologies must be printed by January 31, 2009. **(Action: All Heads of Research Centres / Divisions and RCM Unit)**	Action has been taken in an excellent manner and all the 33 potential technology brochures of the Institute have been published and released by the DDG (NRM). Another publication on potential technologies in a book form has also been published.
4.	The final document of "Fifty Years Research of Soil & Water Conservation" should be submitted by Research Centres Agra, Datia and Vasad by January 20, 2009 positively. The document should include all R&D information of soil and water conservation carried out by other organization, State Departments etc. in the region. **(Action: Head, Research Centres Agra, Datia and Vasad)**	The final document of 50 years research has been submitted by Research Centres, Agra, Datia and Vasad.
5.	Remaining part of computerization of data on rainfall, runoff, soil loss, vegetation change, plant parameters, crop yield etc. for the projects concluded till the year 2002 must be completed and submitted by all Research Centres/Divisions by January 20, 2009 positively with two hard and soft copies. Data should be thoroughly checked by Head of Research Centres / Divisions while submitting. In order to make research data available to the Institute scientists and other users, data should be submitted project wise and in a properly bound form. All data records to be submitted by Research Centres/Divisions may be examined by Mr. Nirmal Kumar, T-7-8 (Stat.) for any discrepancies. **(Action: All Heads of Research Centres / Divisions and Mr. Nirmal Kumar)**	Action regarding computerization of available data for the projects concluded till the year 2002 has been completed by all Research Centres and Divisions.
6.	Demand of expenditure for preparatory phase of NWDPRA Model Watershed projects should be submitted by all Research Centres and H&E Division by Jan.10, 2009. All activities pertaining to preparatory phase must be completed before March 31, 2009. **(Action: All Heads of Research Centres & H&E Division)**	Demand of expenditure of NWDPRA model watershed projects have been submitted by all Research Centres & H&E Division and activities of preparatory phase and work phase are in progress. However, progress of activities needs to be improved by all Research Centres and H&E Division.
7.	Monthly Progress Report (MPRs), which are being submitted by Research Centres/Divisions for onward transmission to ICAR for cabinet reporting, should be in quantifiable manner alongwith economics. It may be from concluded or on-going research projects and Head of Research Centres/Divisions should check it properly before it is sent to Headquarters. **(Action: All Heads of Research Centres/Divisions)**	MPRs are not being submitted in quantifiable manner by some of the Research Centres / Divisions. However, instructions have been given again for submitting them in a quantifiable manner with economics.
8.	In case of externally funded or any other project, it is the responsibility of Head of Centre and project leader to see that there is no delay in the project activities due to non-receipt of money from the Headquarters. In the meanwhile, money should be met out from the Centres' budget for undertaking activities as per time schedule. **(Action: All Heads of Research Centres)**	Efforts are being made for timely withdrawal of funds for externally funded and other projects by the Research Centres and activities are being undertaken.
9.	For better hydrological calibration of experimental plots, the heterogeneity within the plots should be reduced. Hydrological uniformity within the plots can be ensured by removing depression storages and maintaining uniform slope and shape throughout the experimental period, as far as possible. **(Action: All project leaders)**	Action has been taken and hydrological uniformity is being maintained in experimental plots by all Research Centres / Divisions.

RESEARCH PROGRAMMES AND SUB-PROGRAMMES

P-1 WATER EROSION APPRAISAL IN DIFFERENT AGRO-ECOLOGICAL REGIONS (P.I. – Dr. K.S. Dadhwal)

1.1 Inventory and database of erosion status using modern tools and procedures
1.2 On-site and off-site effects of erosion
1.3 Soil erosion processes and models

P-2 CONSERVATION MEASURES FOR SUSTAINABLE PRODUCTION SYSTEMS (P.I. – Dr. N.K. Sharma)

2.1 Resource conservation measures for arable lands
2.2 Resource conservation measures for non-arable lands

P-3 HYDROLOGICAL BEHAVIOUR OF WATERSHEDS FOR CONSERVATION PLANNING (P.I. – Er. C. Prakash)

3.1 Rainfall, runoff, vegetation, soil characteristics and management practices
3.2 Effect of conservation measures and landuse on ground water recharge
3.3 Water harvesting

P-4 REHABILITATION OF AREAS AFFECTED BY MASS EROSION (P.I. – Er. K.P. Tripathi)

4.1 Refinement of technologies for torrent training, landslide control and minespoils rehabilitation

P-5 PARTICIPATORY INTEGRATED WATERSHED MANAGEMENT (P.I. – Dr. O.P. Chaturvedi)

5.1 Methodologies for development of watersheds and decision support systems for interventions
5.2 Landuse planning
5.3 Impact on production, environment and bio-diversity
5.4 Farming system approach.
5.5 Watershed technologies (Strategic research)

P-6 SOCIO-ECONOMIC ANALYSIS AND POLICY DEVELOPMENT FOR WATERSHED MANAGEMENT (P.I. – Dr. Pradeep Dogra)

6.1 Resource economics
6.2 Institute village linkage programme for Technology assessment and refinement
6.3 Common property resource management

P-7 HUMAN RESOURCE DEVELOPMENT AND TECHNOLOGY TRANSFER (P.I. – Dr. B.L. Dhyani)

7.1 Training methodology, need assessment, gender neutrality and evaluation
7.2 Organizational infrastructure & motivational parameters
7.3 Participatory approaches, dissemination of technology and adoption

STATUS OF PROGRAMME WISE ON-GOING PROJECTS

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	Leader and Associates	Centre/Division	Start	Completion	Remarks
1.	Landuse analysis by using remote sensing and GIS for resource conservation in shifting cultivated eastern ghats region of Orissa.	D. Barman H. Gowda P. Jakhar B.S. Naik	Koraput	2010	2012	To be continued **(New Project)**
2.	Delineation and characterization of Mahi ravines using remote sensing and GIS in terms of resource potential planning.	Gopal Kumar D.R. Sena V.C. Pandey A.K. Vishwakarma	Vasad	2009	2012	To be continued
Comments: Dr. A.K. Vishwakarma will replace Dr. H.B. Singh as associate. (Action: Dr. Gopal Kumar)						

1.2 ON-SITE AND OFF-SITE EFFECTS OF EROSION

3.	Effectiveness of vegetative filter strips in preventing soil and nutrient losses.	B.K. Rao A.K. Vishwakarma V.C. Pande	Vasad	2010	2014	To be continued **(New Project)**
Comments: Peripheral bund treatment should be included. (Action: Dr. B.K. Rao)						

1.3: SOIL EROSION PROCESSES AND MODELS

4.	Development and validation of runoff and erosion prediction models in different agro-ecological regions.	V.N. Sharda P.R. Ojasvi Ambrish Kumar, S. Patra	Hydrology & Engineering, Dehradun	2003	2010	To be concluded **(Core Project)**
		A.K. Tiwari V.K. Bhatt	Chandigarh			
		Shakir Ali	Kota			
		R.S. Kurothe D.R. Sena	Vasad			
Comments: Project is again extended for one year till 2010. More data of watershed parameters being used in the models may be obtained from Research Centres for improving correlation and thus predictions. AGNPS Model should be operationalized by March, 2010. Data of 10 rainfall – runoff events of Sainji watershed and five watersheds of Dehradun may be supplied to Vasad Centre. All five models should be tested and validated for two watersheds of each centre and Dehradun Headquarters not used for model development in the study by March, 2010. A workshop may be organized in May, 2010 for presentation of all results. (Action: Dr. P.R. Ojasvi and leaders at Chandigarh, Kota and Vasad Centres)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
5.	Erosion-productivity relationships for evaluating vulnerability and resiliency of soils under different agro-climatic regions of India.	D. Mandal S. Patra N.K. Sharma P. Dogra	HRD&SS, Dehradun	2008	2014	To be continued (**Core Project**)
		S.K. Dubey A.K. Singh R.K. Dubey	Agra	2009		
		S.K.N. Math S.L. Patil R.N. Adhikari	Bellary	2009		
		R.P. Yadav Pratap Singh A.K. Tiwari	Chandigarh	2009		
		H. Biswas Dev Narayan	Datia	2009		
		D. Barman P. Jakhar B.S. Naik	Koraput	2009		
		R.K. Singh S.N. Prasad B.K. Sethy	Kota	2009		
		D.V. Singh V.Selvi K. Kannan	Udhagamandalam	2009		
		Gopal Kumar R.S. Kurothe A.K. Vishwakarma	Vasad	2009		
Comments: Dr. S.K. Dubey will be the leader in place of Dr. Pramod Jha at Agra Centre. Dr. A.K. Vishwakarma will replace Dr. H.B. Singh as second associate at Vasad Centre. Level of slopes and principal crops may be taken as per discussion held among the members of core-group during IRC meeting. (Action: Dr. D. Mandal and leaders of all Research Centres)						
6.	Development of scalogram model based on soil parameters, landuse and topographic characteristics for estimation of sediment yield from small watersheds.	Sharmistha Pal V.K. Bhatt A.K. Tiwari	Chandigarh	2010	2011	To be continued **(New Project)**

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
7.	Modified soil erodibility K factor for the soil in the Bundelkhand region, India.	P.P. Adhikary	Datia	2009	2010	To be concluded
Comments: For working out modified soil K factor, as much data available from universities and other organizations may be collected and data gaps may be filled by using established relationships (transfer function) between parameters whose data is missing with that whose data is available. (Action: Dr. P.P. Adhikary)						

P-2: CONSERVATION MEASURES FOR SUSTAINABLE PRODUCTION SYSTEMS

2.1: RESOURCE CONSERVATION MEASURES FOR ARABLE LANDS

8.	Yield maximization and resource conservation through organic input management.	B.N. Ghosh N.K. Sharma Pradeep Dogra	Soil Science & Agronomy, Dehradun	2007	2014	To be continued
9.	Evaluation of organic farming vis-à-vis inorganic farming for resource conservation and sustained productivity under prominent cropping system.	K.S. Dadhwal N.K. Sharma S. Patra	Soil Science & Agronomy, Dehradun	2008	2015	To be continued
10.	Impact of *okra*-maize intercropping on resource conservation and productivity.	N.K. Sharma D. Mandal Ambrish Kumar	Soil Science & Agronomy, Dehradun	2008	2013	To be continued
Comments: Economics may be worked out and presented. (Action: Dr. N.K. Sharma)						
11.	Integrated rain water management for enhancing rain water productivity in maize based cropping system.	M. Madhu Ambrish Kumar D. Mandal	HRD&SS, Dehradun	2010	2013	To be continued **(New Project)**
12.	Evaluating productivity potential of *bhimal* (*Grewia optiva*) along with field crops.	Harsh Mehta K.S. Dadhwal	Plant Science, Dehradun	2005	2015	To be continued
Comments: Reasons for differential growth at different locations may be brought out. Parameters responsible may be identified and quantified. (Action: Dr. Harsh Mehta)						
13.	Productivity enhancement in fruit and flower based two tier horticulture system through integrated nutrient management and mulching.	A.C. Rathore B.N. Ghosh	Plant Science, Dehradun	2008	2015	To be continued
14.	Resource conservation and sustainable crop production using bio-fertilizers and organics in degraded Shiwaliks.	Pawan Sharma Pratap Singh Ram Prasad S.L. Arya	Chandigarh	2007	2011	To be continued
Comments: As per RPF I, since the study is being conducted in rainfed condition no life saving irrigation is to be applied. However, if applied this should be discussed in next IRC meeting. (Action: Dr. Pawan Sharma)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
15.	Conservation tillage for resource management and higher production from Shiwaliks.	R.P. Yadav Pratap Singh Pawan Sharma	Chandigarh	2009	2015	To be continued
Comments: Gauging devices must be installed by March 31, 2010 for collecting runoff and soil loss data in monsoon season. Plot size must be increased to 10m x 5m. (Action: Dr. R.P. Yadav)						
16.	Intercropping and tillage practices for sustainable production under rainfed condition in Bundelkhand.	Dev Narayan H. Biswas	Datia	2006	2010	To be concluded
Comments: Water use efficiency (WUE) analysis should be done and presented. (Action: Dr. Dev Narayan)						
17.	*In situ* moisture conservation practices under aonla based agro-forestry system for sustainable production in red soils of Bundelkhand.	Dev Narayan H. Biswas	Datia	2010	2018	To be continued
Comments: As proposed by Co-PI of project, the House has approved the modified treatments of the project. Year of start and completion of this project are again changed to 2010 and 2018, respectively. (Action: Dr. Dev Narayan)						
18.	Conserving resources and augmenting livelihood of small holders through multi-tier cropping systems in tribal dominant Eastern Ghats of Orissa.	P. Jakhar B.S. Naik	Koraput	2005	2010	To be concluded
19.	Evaluating the different crop combinations for strip cropping in terms of soil, nutrient losses and their productivity in uplands of Eastern Ghats.	P. Jakhar B.S.Naik D. Barman K.P. Gore	Koraput	2009	2011	To be continued
Comments: Non-procurement of drums and non-installation of gauging devices has been viewed very seriously by the House as one year valuable hydrological data could not be recorded. Drums must be procured by Jan. 31, 2010 and gauging devices should be installed by March 31, 2010. (Action: Mr. P. Jakhar)						
20.	Resource conservation by alley cropping in shifting cultivated degraded lands of Eastern Ghat.	H. Gowda P. Jakhar D. Barman K.P. Gore	Koraput	2009	2013	To be continued
Comments: Non-procurement of drums and non-installation of gauging devices has been viewed very seriously by the House as one year valuable hydrological data could not be recorded. Drums much be procured by Jan. 31, 2010 and gauging devices should be installed by March 31, 2010. (Action: Mr. H. Gowda)						
21.	Green manuring for resource conservation, soil health and productivity in fallow mustard cropping sequence.	S.N. Prasad R.K. Singh Shakir Ali Ashok Kumar	Kota	2008	2010	To be concluded
Comments: Dhencha may be replaced by moong. (Action: Dr. S.N. Prasad)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
22.	Techniques for establishment of tea on terrace riser in the Nilgiris.	O.P.S. Khola D.V. Singh V. Selvi	Udhagamandalam	2008	2012	To be continued
23.	Improvisation of terraces of farmers' fields in the Nilgiris.	K. Kannan	Udhagamandalam	2008	2010	To be concluded
Comments: Dr. K. Kannan will replace Dr. M. Madhu as leader of project.						
24.	Optimum tillage and organic manuring practices for crop production and resource conservation in the Nilgiris.	O.P.S. Khola K. Kannan	Udhagamandalam	2008	2011	To be continued
25.	Integrated management of soil health for sustainable production in the Nilgiris.	D.V. Singh D.C. Sahoo	Udhagamandalam	2008	2010	To be concluded

2.2: RESOURCE CONSERVATION MEASURES FOR NON-ARABLE LANDS

26.	Evaluation of the agro-forestry systems for marginal lands in Doon valley.	Charan Singh N.K. Sharma M. Shankar Pradeep Dogra	HRD&SS, Dehradun	2001	2010	To be concluded
27.	Fuelwood and fodder production from densified plantations on old riverbed land.	J. Jayaprakash Charan Singh B.N. Ghosh	Plant Science, Dehradun	1997	2016	To be continued
Comments: Dr. J. Jayaprakash will replace Dr. A. Raizada as leader of project. Year of completion of this project will be decided in the next IRC meeting. (Action: Dr. J. Jayaprakash)						
28.	Evaluating the performance and developing techniques for enhancing growth and seed yield of Jatropha curcas in degraded lands of sub-humid Himalayas.	J. Jayaprakash D. Mandal	Plant Science Dehradun	2006	2015	To be continued
29.	Enhancement of guava productivity through canopy management and mulching in rainfed bouldery riverbed lands.	A.C. Rathore B.N. Ghosh	Plant Science, Dehradun	2008	2015	To be continued
30.	Evaluation of traditional minor millet based agro-forestry systems under recommended agri-silvicultural practices of North-Western Himalayas.	Harsh Mehta J.M.S. Tomar D. Mandal	Plant Science, Dehradun	2009	2018	To be continued
Comments: Procurement of gauging devices may be done immediately to collect data. (Action: Dr. Harsh Mehta)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
31.	Effect of degradation on conservation and production attributes of Sal forests in Uttarakhand.	O.P. Chaturvedi K.K. Choudhary J. Jayaprakash J.M.S. Tomar Charan Singh	Plant Science, Dehradun	2010	2015	To be continued (**New Project**)
Comments: The project needs to be restructured so that optimum (minimum) data is collected for maximum extrapolation to avoid practical problems of data collection in field. Therefore, only three sites should be selected for this study and established relationships should be used for generating the data from basic data collected in field. Using data falling in broad range e.g. general slope etc. the results may be extrapolated / computed for other areas having identical conditions. (Action: Dr. O.P. Chaturvedi)						
32.	Evaluation of fruit species vis-à-vis conservation techniques for salt affected black soils of semi-arid tropic regions.	S.K.N. Math R.N. Adhikari	Bellary	2005	2015	To be continued
33.	Study on effect of *in situ* moisture conservation measures on runoff, soil loss and yield of maize crop.	Pratap Singh V.K. Bhatt Pawan Sharma	Chandigarh	2007	2010	To be concluded
Comments: Project is extended for one year till 2010 due to failure of crops. (Action: Dr. Pratap Singh)						
34.	Peach based agri-horticulture land use system for degraded Shiwaliks.	Ram Prasad Pratap Singh R.P. Yadav S.L. Arya	Chandigarh	2008	2015	To be continued
Comments: Seed should be procured from reliable sources to prevent loss of production. (Action: Dr. Ram Prasad)						
35.	Developing SALT (Sloping Agricultural Land Technology) for resource conservation and economic upliftment in Shiwaliks.	Pankaj Panwar Ram Prasad V.K. Bhatt Pratap Singh Sharmistha Pal	Chandigarh	2010	2015	To be continued **(New Project)**
Comments: In top one third area, melia and kronda may be planted in place of eucalyptus and in bottom one third, boundary plantation of popular may be done. (Action: Dr. Pankaj Panwar)						
36.	Evaluation of moisture conservation techniques for sustainable production of Tree Borne Oil Seeds (TBOS) in Bundelkhand.	M.N. Ramesha P.P. Adhikary	Datia	2010	2017	To be continued **(New Project)**
Comments: Equipments may be borrowed from IGFRI and NRCAF, Jhansi. Meanwhile, requisition for procurement of equipments may be submitted to Institute. (Action: Dr. M.N. Ramesha)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
37.	Bio-engineering measures for resource conservation and management in red sloppy lateritic soils of Orissa.	B.S. Naik P. Jakhar H. Gowda	Koraput	2008	2011	To be continued
Comments: Leader of project failed to achieve the targets set under the project inspite of comments of last year IRC meeting which is viewed very seriously by the House and he is solely responsible for the inordinate delay in execution of project. Leader must ensure construction of gauging devices and implementation of interventions by Feb. 28, 2010 otherwise project will be closed. (Action: Er. B.S. Naik)						
38.	Evaluation of different under utilized fruit species with varying inter-space managements in Chambal ravines.	H.R. Meena A.K. Parandiyal R.K. Singh Ashok Kumar	Kota	2006	2015	To be continued
Comments: Treatments must be well maintained periodically after removing bushes. Grasses should be harvested yearly in the month of October. Annual increment of trees should be recorded. (Action: Mr. H.R. Meena)						
39.	Evaluation of promising oilseed tree species under silvi-pastoral system for rehabilitation of Chambal ravines.	A.K. Parandiyal R.K. Singh Ashok Kumar	Kota	2008	2015	To be continued
40.	Effectiveness of different bio-engineering measures in new tea plantation in the Nilgiris.	D.C. Sahoo O.P.S. Khola	Udhagamandalam	2007	2010	To be concluded
Comments : Dr. O.P.S. Khola will replace Dr. M. Madhu as an associate.						
41.	Enhancing productivity of non-arable ravine lands by plantation of *A. sapota* with intercropping systems.	A.K. Vishwakarma B.K. Rao Gopal Kumar V.C. Pande	Vasad	2008	2022	To be continued
Comments: Dr. A.K. Vishwakarma and Dr. B.K. Rao will replace Dr. H.B. Singh and Dr. M.L. Gaur as leader and first associate, respectively. Due to problem of pH value of soil, cashew may be replaced by *A. sapota* and title of the project is modified accordingly. (Action: Dr. A.K. Vishwakarma)						

P-3: HYDROLOGICAL BEHAVIOUR OF WATERSHEDS FOR CONSERVATION PLANNING

3.1: RAINFALL, RUNOFF, VEGETATION, SOIL CHARACTERISTICS AND MANAGEMENT PRACTICES

42.	Hydrological behaviour of small watersheds and sustainability of production systems.	V.N. Sharda C. Prakash O.P. Chaturvedi N.K. Sharma	Hydrology & Engineering, Dehradun	1999	2010	To be concluded
Comments: Dr. O.P. Chaturvedi will replace Dr. A. Raizada as associate of the project. Analysis of storms may be done in terms of rainfall and runoff. Entire data of whole project may be presented in the next IRC meeting. (Action: Er. C. Prakash)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
43.	Testing of hydrological instruments.	K.P. Tripathi S. Patra	Hydrology & Engineering, Dehradun	2005	2010	To be concluded
Comments: Project is extended for one year till 2010 for testing the instruments under process of procurement. A report of recommendations of already tested instruments may be submitted by Feb. 28, 2010. (Action: Er. K.P. Tripathi)						
44.	Assessment of impact of climate change on hydrology and crop production in the selected watersheds.	K.P. Tripathi D.R. Sena S. Patra Gopal Kumar A.K. Vishwakarma	Hydrology & Engineering, Dehradun	2007	2011	To be continued **(NPCC Funded)**
Comments: Dr. A.K. Vishwakarma will replace Dr. H.B. Singh at Vasad Centre. Two to three page note containing guidelines for data collection and parameters to be covered in ongoing studies should be sent by Er. K.P. Tripathi to all Research Centres/Divisions by March 15, 2010. Hydrological data of last 50 years may be analysed by each Research Centre by breaking into two blocks, one before 1985 and other there after to ascertain early, normal onset, delayed period of rainfall and correlated with runoff, soil loss, crop productivity etc. and data should be sent to Er. K.P. Tripathi every three months for onward transmission to Council and for presentation in next IRC meeting. (Action: Er. K.P. Tripathi and Heads of all Research Centres / Divisions)						
45.	Hydrological evaluation of recommended forest trees in Himalayan foothills.	O.P. Chaturvedi Ambrish Kumar Charan Singh B.N. Ghosh	Plant Science, Dehradun	2004	2018	To be continued
Comments: Dr. O.P. Chaturvedi will replace Dr. A. Raizada as leader of project.						
46.	Hydrological response to micro-catchments under different land uses with vegetation manipulation.	V.K. Bhatt A.K. Tiwari Pankaj Panwar	Chandigarh	2005	2012	To be continued
Comments: Dr. Pankaj Panwar will replace Dr. Pawan Sharma as second associate. Present set up (vegetation cover) may be maintained 2-3 years without lantana to collect adequate data for analysis. (Action: Dr. V.K. Bhatt)						
47.	Analysis of climatic data for evolving drought indices towards planning sustainable cropping systems in Bundelkhand.	P.P. Adhikary M.N. Ramesha	Datia	2010	2014	To be continued (**New Project**)
Comments: Extensive review of literature at regional, national and international level may be done on climate change. Indices may be worked out and solution / plan for mitigation of drought effect may be provided. Second objective of the project may be restructured in light of review of work done under NPCC. (Action: Dr. P.P. Adhikary)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
48.	Hydrological implication of sequential alternation of land use covers in a ravinous catchment.	R.S. Kurothe D.R. Sena V.C. Pande Gopal Kumar A.K. Vishwakarma	Vasad	2004	2012	To be continued
Comments: Dr. A.K. Vishwakarma will replace Dr. H.B. Singh as associate of project. Impact of removal of riparian vegetation may be studied for one more year. (Action: Dr. R.S. Kurothe)						
49.	Design development and testing of simple and low cost continuous mechanical sediment yield sampler.	D.R. Sena R.S. Kurothe	Vasad	2005	2010	To be concluded
Comments: Project is again extended for one year till 2010 without further extension for complete fabrication of instrument, its testing and bringing it in the form of a commercial product. (Action: Dr. D.R. Sena)						
50.	Hydrologic and economic evaluation of Bamboo plantations in gullied lands under major ravines of India.	B.K. Rao Gopal Kumar V.C. Pande	Vasad	2008	2011	To be continued (**National Bamboo Mission**)
		A.K. Singh S.K. Dubey	Agra			
		A.K. Parandiyal Shakir Ali	Kota			
Comments: Dr. B.K. Rao and Dr. A.K. Singh will be the leader in place of Dr. M.L. Gaur and Dr. K.P. Mohapatra at Vasad and Agra Centres, respectively. All three Centres should use balance amount of 2009-10 by the end of this year. Sediment retained behind bamboo plants every year must be assessed through survey to analyse the effectiveness of bamboo plantation. Plan for utilization of remaining budget should be submitted by all Centres by Dec., 2009. (Action : Dr. B.K. Rao / Dr. A.K. Singh / Dr. A.K. Parandiyal)						

3.2 : EFFECT OF CONSERVATION MEASURES AND LANDUSE ON GROUND WATER RECHARGE

51.	Design and development of site specific artificial groundwater recharge filters.	Gopal Kumar D.R. Sena	Vasad	2009	2012	To be continued
Comments: Institute projects may be identified for collecting quality data on runoff under different landuses and the same may be used for testing and development of recharge filters. Technology of recharge filters developed should be demonstrated in areas adjoining research farm under 'Transfer of Technology'. (Action: Dr. Gopal Kumar)						

3.3: WATER HARVESTING

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
52.	Integration of low cost water harvesting and micro irrigation for resource conservation and sustainable vegetable production in terraced lands in North Western Himalayas.	S. Patra G.P. Juyal A.C. Rathore	Hydrology & Engineering, Dehradun	2010	2012	To be continued **(New Project)**
53.	Hydrological evaluation of CBT in Himalayan foothills.	Ambrish Kumar N.K. Sharma B.L. Dhyani	HRD&SS, Dehradun	2007	2010	To be concluded
Comments: Project is extended for one year till 2010 due to failure of crop. New project may be formulated for other crop combinations. (Action: Dr. Ambrish Kumar)						
54.	Estimation of water budget components for predominant land uses of south-eastern Rajasthan for conservation planning.	B.K. Sethy R.K. Singh H.R. Meena	Kota	2010	2015	To be continued (**New Project**)

P-4 REHABILITATION OF AREAS AFFECTED BY MASS EROSION

4.1 REFINEMENT OF TECHNOLOGIES FOR TORRENT TRAINING, LANDSLIDE CONTROL AND MINESPOILS REHABILITATION

55.	To study the performance of special types of spurs through laboratory studies (in hydraulic flume).	G.P. Juyal S. Patra	Hydrology & Engineering, Dehradun	2009	2011	To be continued
Comments: Project should be conducted for different sets of slopes, angles, type of spurs and discharge combinations and hydraulic flume facilities should be utilized for at least 75-80 days in a year to collect sufficient data for drawing meaningful conclusions. (Action: Dr. G.P. Juyal)						
56.	Cost effective conservation measures for management of medium and deep ravinous lands	B.K. Sethy A.K. Parandiyal Shakir Ali Ashok Kumar R.K. Singh	Kota	2004	2012	To be continued
Comments: Er. Shakir ali should collect all the data of the project in the absence of Er. B.K. Sethy temporarily transferred to Datia Centre. (Action: Er. Shakir Ali)						
57.	Productive utilization of ravines through introduction of horticulture and improved planting materials.	A.K. Parandiyal R.K. Singh B.K. Sethy H.R. Meena	Kota	2005	2010	To be concluded

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
58.	Landslide characterization and management plan for the Nilgiris.	D.V. Singh V. Selvi	Udhagamandalam	2005	2010	To be concluded **(HADP Funded)**
Comments: Project is extended for one year till 2010 as the funds were received late from the HADP. Name of Er. D.C. Sahoo is deleted. (Action: Dr. D.V. Singh)						

P-5: PARTICIPATORY INTEGRATED WATERSHED MANAGEMENT

5.1 METHODOLOGIES FOR DEVELOPMENT OF WATERSHEDS AND DECISION SUPPORT SYSTEMS FOR INTERVENTIONS

59.	Resource conservation and management in Netrenahalli watershed, Chitradurga district, Karnataka.	R.N. Adhikari S.K.N. Math S.L. Patil A. Raizada	Bellary	2008	2011	To be continued **TDET (MoRD)**
Comments : Name of Dr. A. Raizada is included as associate. Horticulture plantation work should be completed by March, 2010. Balance funds should be utilized by March, 2010. (Action: Er. R.N. Adhikari)						

5.4 FARMING SYSTEM APPROACH

60.	Evaluation of fish based Integrated Farming Systems in foothills and mid-hills of Himalayas.	M. Muruganandam C.Prakash	Hydrology & Engineering, Dehradun	2009	2011	To be continued
Comments: The study should be on fish based farming system and not only on fish farming. (Action: Mr.M.Muruganadam)						
61.	Enhancement of livelihood security through sustainable farming systems and related farm enterprises in North-West Himalaya.	B.L. Dhyani Ambrish Kumar D. Mandal	HRD&SS, Dehradun	2007	2011	To be continued (**NAIP Project**)
Comments: All gauging stations must be constructed by March, 2010. (Action: Dr. B.L.Dhyani)						

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
62.	Multiple criteria decision for identifying suitable Integrated Farming Systems in different agro-ecological regions for optimizing resource conservation and productivity.	Pradeep Dogra N.K. Sharma A.C. Rathore M. Muruganandam, S. Patra	RCM Unit, Dehradun	2009	2013	To be continued (**Core Project**)
		P.K. Panda A.K. Singh, M. Prabhavathi	Agra			
		S.L. Patil S.K.N. Math, R.N. Adhikari	Bellary			
		S.L. Arya Pratap Singh Sharmistha Pal, Ram Prasad	Chandigarh			
		Dev Narayan P.P. Adhikary, M.N. Ramesha	Datia			
		P. Jakhar B.S. Naik, D. Barman	Koraput			
		Ashok Kumar H.R. Meena B.K. Sethy, S.N. Prasad	Kota			
		K. Kannan D.V. Singh, V. Selvi	Udhagamandalam			
		V.C. Pande Gopal Kumar, A.K. Vishwakarma	Vasad			
Comments: Ms. M. Prabhavathi will replace Dr. Pramod Jha and Dr. A.K. Vishwakarma will replace Dr. H.B. Singh as second associate at Agra and Vasad Centre, respectively. Core leader and associates may identify suitable farmers for integrated farming systems that ensure to co-operate fully in the project. The Co-PIs must ensure that once an optimal plan generated for a farmer has been finalized after approval by the farmer, it must be strictly implemented *in toto* on field without any deviation in any aspect including variety, quantity of input used etc. After implementation of the optimal plan on farmer's field, it must be monitored for collection of data similar to data of the existing plan. Livestock interventions can be implemented in the livestock component of the IFS. Local state agencies may be contacted to implement some interventions on veterinary components as this is a project on integrated farming systems. Objective of soil loss minimization (for sustainability) can be included along with other objectives of the farmer without consultation of the farmer for generation of optimal plan. For this, soil loss data of the crops generated through experiments may be utilized. For comparison, similar data of another farmer of the same category and of the same watershed, and having similar production activities as in the existing plan of the IFS farmer may be collected. When costly new interventions are included as part of the IFS, optimal plan may be generated in unrestricted capital scenario. A marginal farmer may be selected for Ashti watershed. Soil health changes may be monitored in the fields where optimal IFS plans have been implemented. Co-PI of Koraput Centre should submit the data in required format to core leader. (Action: Dr. Pradeep Dogra and Leaders of all Centres)						

5.5 : WATERSHED TECHNOLOGIES (STRATEGIC RESEARCH)

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
63.	Development of model watershed Iduhatti in the Nilgiris.	D.V. Singh V. Selvi P. Sundarambal R. Ragupathy K. Kannan	Udhagamandalam	2008	2011	To be continued **(HADP Funded)**
Comments: Name of Dr. M. Madhu is deleted and Dr. D.V. Singh will be the leader of project. Name of Dr. K. Kannan is included as associate. Implementation of programme should be expedited. (Action: Dr. D.V. Singh)						

P-6: SOCIO-ECONOMIC ANALYSIS AND POLICY DEVELOPMENT FOR WATERSHED MANAGEMENT

6.1: RESOURCE ECONOMICS

64.	Relative performance of watershed development projects under different institutional structures in semi-arid Karnataka and Andhra Pradesh.	S.L. Patil	Bellary	2008	2010	To be concluded

6.2 : INSTITUTE VILLAGE LINKAGE PROGRAMME FOR TECHNOLOGY ASSESSMENT AND REFINEMENT

65.	Participatory dissemination and assessment of land and water management technologies for livelihood security in rainfed areas of north-western Himalayas under TDET scheme, Dept. of Land Resources, Ministry of rural Development.	B.L. Dhyani Ambrish Kumar Charan Singh Bankey Bihari M. Muruganandam D. Mandal M. Madhu	HRD&SS, Dehradun	2007	2010	To be concluded **TDET (MoRD)**
Comments: Name of Dr. M. Madhu is included as associate of the project.						

6.3 : COMMON PROPERTY RESOURCE MANAGEMENT

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
66.	Evaluation of institutional arrangements and impact of community based water storage structures in different agro-climatic zones of India	Pradeep Dogra Bankey Bihari B.L. Dhyani C. Prakash	RCM Unit, Dehradun	2008	2011	To be continued **(Core Project)**
		R.N. Adhikari	Bellary			
		S.L. Arya V.K. Bhatt	Chandigarh			
		Om Prakash	Datia			
		Ashok Kumar Shakir Ali	Kota			
		P. Sundarambal D.C. Sahoo	Udhagamandalam			
		V.C. Pande G.L. Bagdi D.R. Sena	Vasad			

P-7 HUMAN RESOURCE DEVELOPMENT AND TECHNOLOGY TRANSER

7.1 TRAINING METHODOLOGY, NEED ASSESSMENT, GENDER NEUTRALITY AND EVALUATION

S. No.	Title of the Project	Leader and Associates	Centre/Division	Start	Completion	Remarks
67.	Capacity building programmes for watershed management in India: Assessment and impact analysis.	Bankey Bihari B.L. Dhyani P. Dogra	HRD & SS, Dehradun	2008	2011	To be continued **(Core Project)**
		S.K.N. Math	Bellary			
		S.L. Arya	Chandigarh			
		Om Prakash	Datia			
		Ashok Kumar	Kota			
		P. Sundarambal	Udhagamandalm			
		G.L. Bagdi V.C. Pande	Vasad			
Comments: Officer trainees data of UP and assistant trainees data from Bellary centre may be taken for impact analysis. (Action: Dr. Bankey Bihari)						

NOTE :

- Although the presentation mode this year was category wise, yet the listing has been done on the basis of identified programmes as done in previous years.
- The year of start and completion in respect of all the projects will be according to the relevant financial years.
- Projects without any soil conservation aspects do not fit into the mandate of the Institute. Hence, observations to justify the study may be recorded.
- Timely funding should be assured well in advance for those projects which are being externally funded.
- All RPFs i.e. RPF I for new projects approved in IRC-2009, RPF II (2009-10) for on-going projects and RPF III for the projects concluded in 2009 should be submitted by March 31, 2010 positively.

PROJECTS CONCLUDED IN 2009

S. No.	Programme No.	S. No. of IRC Meeting Proc. 2008	Title of the Project	Centre/Division
1.	1.1	1	Surface hydrologic response estimation using GIS.	Hydrology & Engineering, Dehradun
2.	1.3	5	Effect of stone check dams on resource conservation in black soils under concentrated flow condition: Simulated study in tilting hydraulic flume.	Bellary
Comments: Data collection and analysis may be completed and presented in the next IRC meeting. (Action: Er. R.N. Adhikari)				
3.	2.1	14	Effect of integrated nutrient management on soil properties under aonla based agri-horti system.	Datia
Comments: Economics to be worked out by March, 2010 and presented in the next IRC meeting. (Action: Dr. H. Biswas)				
4.	2.1	20	Effect of soil amendments on surface cracks in black soils of south eastern Rajasthan.	Kota
5.	2.1	22	Soil health, productivity and conservation under different nutrient management systems for export oriented vegetable crops in the Nilgiris.	Udhagamandalam
Comments: Technology should be demonstrated in the farmers' field under Transfer of Technology. (Action: Dr. D.V. Singh)				
6.	2.2	27	Silvipastoral systems under various management practices for degraded lands.	HRD&SS, Dehradun
7.	2.2	38	Studies on afforested Shola species and swamps in the Nilgiris.	Udhagamandalam
8.	3.1	46	Combating land degradation through cycling of organic matter under different land use systems.	Agra
9.	3.2	51	Effect of conservation structures on ground water recharge.	Vasad, Chandigarh, Datia, Kota, Koraput, Bellary, Udhagamandalam
10.	3.3	54.	Study on the effect of water quality on water use efficiency in Agra watershed.	Agra
Comments: Presentation is not up to the mark and final results of two years data should be presented in the next IRC meeting. (Action: Er. S.K. Srivastava)				
11.	4.1	56	Characterization of soil stability and its improvement in mass erosion prone areas of lower Shiwalik.	Chandigarh
Comments: Data collected should be thoroughly analyzed to find criteria to understand the stability of landslide and presented in next IRC meeting. (Action: Dr. R.P. Yadav)				
12.	4.1	60	Field based estimation of stream bank erosion for different ephemeral channels in Mahi ravines.	Vasad
Comments: Stream bank erosion rate in terms of per km length on strait, concave and convex banks should be reported. (Action: Dr. B.K. Rao)				

S. No.	Programme No.	S. No. of IRC Meeting Proc. 2008	Title of the Project	Centre/Division
13.	5.4	64	Visioning, Policy Analysis and Gender (V-PAGe)	RCM Unit, Dehradun
14.	5.5	66	Watershed Technology (Mission Mode).	Hydrology & Engineering, Dehradun
Comments: Runoff data may be collected on contractual basis. FPARP programme may be continued in the watershed for three crop seasons. Dr. M. Madhu is associated in the FPARP programme in the watershed. (Action: Er. K.P. Tripathi)				
15.	7.1	71	Study on capacity building of field functionaries for watershed development and management.	HRD&SS Division, Dehradun
16.	7.3	73	Information and communication technologies for efficient water management: US India collaborative extension / outreach and distance education under AKI.	Chandigarh
Comments: AKI website should be continued by Research Centre, Chandigarh with Institute budget for another 15 years with suitable modifications. (Action: Dr. S.L. Arya)				

NEW PROJECTS APPROVED IN IRC MEETING – 2009

S. No.	Prog. No.	S.No. of this proc-eedings	Title of the Project	Centre/Division
1.	1.1	1	Landuse analysis by using remote sensing and GIS for resource conservation in shifting cultivated eastern ghats region of Orissa.	Koraput
2.	1.2	3	Effectiveness of vegetative filter strips in preventing soil and nutrient losses.	Vasad
3.	1.3	6	Development of scalogram model based on soil parameters, landuse and topographic characteristics for estimation of sediment yield from small watersheds.	Chandigarh
4.	2.1	11	Integrated rain water management for enhancing rain water productivity in maize based cropping system.	HRD&SS, Dehradun
5.	2.2	31	Effect of degradation on conservation and production attributes of Sal forests in Uttarakhand.	Plant Science, Dehradun
6.	2.2	35	Developing SALT (Sloping Agricultural Land Technology) for resource conservation and economic upliftment in Shiwaliks.	Chandigarh
7.	2.2	36	Evaluation of moisture conservation techniques for sustainable production of Tree Borne Oil Seeds (TBOS) in Bundelkhand.	Datia
8.	3.1	47	Analysis of climatic data for evolving drought indices towards planning sustainable cropping systems in Bundelkhand.	Datia
9.	3.3	52	Integration of low cost water harvesting and micro irrigation for resource conservation and sustainable vegetable production in terraced lands in North Western Himalayas.	Hydrology & Engineering, Dehradun
10.	3.3	54	Estimation of water budget components for predominant land uses of south-eastern Rajasthan for conservation planning.	Kota

OBSERVATIONAL TRIAL APPROVED FOR 2010

S.No.	Title of the project	Leader & Associate	Centre/Division
1.	Validation of ITK for forecasting / prediction of short, medium and long duration rainfall.	K.P. Tripathi V.N. Sharda	Hydrology & Engineering, Dehradun
Comments: Data may be collected from Research Centres / Divisions and presented in the next IRC meeting. (Action: Er. K.P. Tripathi)			

DIVISION/CENTRE-WISE NUMBER OF ON-GOING PROJECTS

TOTAL NUMBER OF PROJECTS (DIVISION/CENTRE-WISE)

S. No.	DIVISION/CENTRE	SL. NO. OF ON-GOING PROJECTS	TOTAL
1.	Dehradun		
	• Soil Science & Agronomy	8,9,10	**03**
	• Hydrology & Engineering	4,42,43,44,52,55,60	**07**
	• HRD & SS	5,11,26,53,61,65,67	**07**
	• Plant Science	12,13,27,28,29,30,31,45	**08**
	• RCM Unit	62,66	**02**
2.	Agra	5,50,62	**03**
3.	Bellary	5,32,59,62,64,66,67	**07**
4.	Chandigarh	4,5,6,14,15,33,34,35,46,62,66,67	**12**
5.	Datia	5,7,16,17,36,47,62,66,67	**09**
6.	Koraput	1,5,18,19,20,37,62	**07**
7.	Kota	4,5,21,38,39,50,54,56,57,62,66,67	**12**
8.	Udhagamandalam	5,22,23,24,25,40,58,62,63,66,67	**11**
9.	Vasad	2,3,4,5,41,48,49,50,51,62,66,67	**12**
	Grand Total		**100**

PROGRAMME-WISE NUMBER OF PROJECTS

S. No.	DIVISION/ CENTRE	P-1	P-2	P-3	P-4	P-5	P-6	P-7	Total
1.	Dehradun								
	♦ Soil Science & Agronomy	-	3	-	-	-	-	-	**03**
	♦ Hydrology & Engineering	1	-	4	1	1	-	-	**07**
	♦ HRD & SS	1	2	1	-	1	1	1	**07**
	♦ Plant Science	-	7	1	-	-	-	-	**08**
	♦ RCM Unit	-	-	-	-	1	1	-	**02**
2.	Agra	1	-	1	-	1	-	-	**03**
3.	Bellary	1	1	-	-	2	2	1	**07**
4.	Chandigarh	3	5	1	-	1	1	1	**12**
5.	Datia	2	3	1	-	1	1	1	**09**
6.	Koraput	2	4	-	-	1	-	-	**07**
7.	Kota	2	3	2	2	1	1	1	**12**
8.	Udhagamandalam	1	5	-	1	2	1	1	**11**
9.	Vasad	4	1	4	-	1	1	1	**12**
	Grand Total	**18**	**34**	**15**	**04**	**13**	**09**	**07**	**100**

NUMBER OF PROJECTS WITH INDIVIDUAL SCIENTIST

In the Staff Research Council Meeting of 1995, certain norms regarding **MAXIMUM** number of projects that any scientist of CSWCRTI may hold, were decided as mentioned below:

A. Leadership in one project with association in other four projects (1+4)

or

B. Leadership in two projects with association in other two projects (2+2)

or

C. Leadership in three projects without association in any other project (3+0)

In the Staff Research Council Meeting of 2000, certain norms regarding **MINIMUM** number of projects that any scientist of CSWCRTI may hold, were decided as mentioned below:

A. Leadership in one project with association in other one project (1+1)

or

B. Association in two projects (0+2).

The number of projects with each individual scientist of the Institute, after the IRC Meeting of 2009 is as follows:

S. No.	Name	Designation	Leader	Associate	Total	S. No. of projects to be concluded
1.	Dr. V.N. Sharda	Director	2 (4,42)	-	2	4,42
Soil Science and Agronomy Division						
2.	Dr. K.S. Dadhwal	Head of Division	1 (9)	1 (12)	2	-
3.	Dr. N.K. Sharma	Pr. Scientist (Agro.)	1 (10)	7 (5,8,9,26,42, 53,62)	8	26,42,53
4.	Dr. B.N. Ghosh	Sr. Scientist (Soils)	1 (8)	4 (13,27,29,45)	5	-
5.	Mr. M. Shankar	Scientist (Soils)	-	1 (26)	1	26
6.	Dr. K.K. Choudhary	Scientist (Soils)	-	1(31)	1	-
Hydrology and Engineering Division						
7.	Dr. G.P. Juyal	Head of Division	1 (55)	1(52)	2	-
8.	Er. K.P. Tripathi	Pr. Scientist (Engg.)	2 (43,44)	-	2	43
9.	Dr. P.R. Ojasvi	Pr. Scientist (Engg.)	-	1 (4)	1	4
10.	Er. S.S. Shrimali	Sr. Scientist (Com.App.)	-	-	-	-
11.	Mr. M. Muruganandam	Scientist (SS) (Fisheries)	1 (60)	2 (62,65)	3	65
12.	Er. S. Patra	Scientist (Engg.)	1(52)	7(4,5,9,43,44,55,62)	8	4,43
Human Resource Development and Social Science Division						
13.	Dr. B.L. Dhyani	Head of Division	2 (61,65)	3 (53,66,67)	5	53,65
14.	Dr. M. Madhu	Sr. Scientist (Agro.)	1(11)	1(65)	2	65
15.	Dr. Charan Singh	Sr. Scientist (Forestry)	1 (26)	4 (27,31,45,65)	5	26,65
16.	Dr. Bankey Bihari	Sr. Scientist (Ag. Extn.)	1 (67)	2 (65,66)	3	65
17.	Dr. Ambrish Kumar	Sr. Scientist (Engg.)	1 (53)	6 (4,10,11,45,61,65)	7	4,53,65
18.	Dr. D. Mandal	Sr. Scientist (Soils)	1 (5)	6 (10,11,28,30, 61,65)	7	65

(Figures in parenthesis are serial number of on-going projects listed in these proceedings).

S. No.	Name	Designation	Leader	Associate	Total	S. No. of projects to be concluded
Plant Science Division						
19.	Dr. O.P. Chaturvedi	Head of Division	2 (31,45)	1(42)	3	42
20.	Dr. Harsh Mehta	Pr. Scientist (Pl. Breed.)	2 (12,30)	-	2	-
21.	Dr. J.M.S. Tomar	Sr. Scientist (Forestry)	-	2 (30,31)	2	-
22.	Dr. A.C. Rathore	Scientist (SS) (Hort.)	2 (13,29)	2 (52,62)	4	-
23.	Dr. J. Jayaprakash	Scientist (Forestry)	2 (27,28)	1 (31)	3	-
Research Coordination & Management Unit						
24.	Er. C. Prakash	Pr. Scientist (Engg.)	-	3 (42,60,66)	3	42
25.	Dr. Pradeep Dogra	Sr. Scientist (Ag. Eco.)	2 (62,66)	4 (5,8,26,67)	6	26
26.	Mr. N.M. Alam	Scientist (Ag. Stat.)	-	-	-	-
Research Centre, Agra						
27.	Dr. S.K. Dubey	Head of Centre	1 (5)	1 (50)	2	-
28.	Dr. P.K. Panda	Sr. Scientist (Agro.)	1 (62)	-	1	-
29.	Dr. A.K. Singh	Sr. Scientist (Engg.)	1 (50)	2 (5,62)	3	-
30.	Mr. R.K. Dubey	Scientist (SS) (Agro.)	-	1 (5)	1	-
31.	Er S.K. Srivastava	Scientist (Engg.)	-	-	-	-
32.	Ms. M. Prabhavathi	Scientist (Soils)	-	1 (62)	1	-
Research Centre, Bellary						
33.	Dr. A. Raizada	Head of Centre	-	1 (59)	1	-
34.	Dr. S.K.N. Math	Pr. Scientist (Soils)	3 (5,32,67)	2 (59,62)	5	-
35.	Er. R.N. Adhikari	Pr. Scientist (Engg.)	2 (59,66)	3 (5,32,62)	5	-
36.	Dr. S.L. Patil	Sr. Scientist (Agro.)	2 (62,64)	2 (5,59)	4	64
Research Centre, Chandigarh						
37.	Dr. A.K. Tiwari	Head of Centre	1 (4)	3 (5,6,46)	4	4
38.	Dr.(Ms.) Pawan Sharma	Pr. Scientist (Soil Micro-bio)	1 (14)	2 (15,33)	3	33
39.	Dr. Pratap Singh	Pr. Scientist (Agro.)	1 (33)	6 (5,14,15,34, 35,62)	7	33
40.	Dr. R.P. Yadav	Pr. Scientist (Soils)	2 (5,15)	1 (34)	3	-
41.	Dr. (Ms.) S.L. Arya	Pr. Scientist (Ag. Eco.)	3 (62,66,67)	2 (14,34)	5	-
42.	Dr. V.K. Bhatt	Sr. Scientist (Engg.)	1 (46)	5 (4,6,33,35,66)	6	4,33
43.	Dr. Ram Prasad	Sr. Scientist (Hort.)	1 (34)	3 (14,35,62)	4	-
44.	Dr. Pankaj Panwar	Sr. Scientist (Forestry)	1 (35)	1 (46)	2	-
45.	Dr.(Ms.)Sharmistha Pal	Scientist (Soils)	1 (6)	2 (35,62)	3	-
Research Centre Datia						
46.	Dr. S.P. Tiwari	Head of Centre	-	-	-	-
47.	Dr. Dev Narayan	Sr. Scientist (Agro.)	3 (16,17,62)	1 (5)	4	16
48.	Dr. Om Prakash	Sr. Scientist (Ag. Extn.)	2 (66,67)	-	2	-
49.	Dr. H. Biswas	Scientist (Soils)	1 (5)	2 (16,17)	3	16
50.	Dr. P.P. Adhikary	Scientist (Soils)	2 (7,47)	2 (36,62)	4	7
51.	Dr. M.N. Ramesha	Scientist (Forestry)	1 (36)	2 (47,62)	3	-

(Figures in parenthesis are serial number of on-going projects listed in these proceedings).

S. No.	Name	Designation	Leader	Associate	Total	S. No. of projects to be concluded
Research Centre, Koraput						
52.	Dr. K.P. Gore	Head of Centre	-	2 (19,20)	2	-
53.	Er. B.S. Naik	Scientist (Engg.)	1 (37)	5 (1,5,18,19,62)	6	18
54.	Mr. H. Gowda	Scientist (Forestry)	1 (20)	2 (1,37)	3	-
55.	Mr. P. Jakhar	Scientist (Agro.)	3 (18,19,62)	4 (1,5,20,37)	7	18
56.	Dr. D. Barman	Scientist (Soils)	2 (1,5)	3 (19,20,62)	5	-
Research Centre, Kota						
57.	Dr. S.N. Prasad	Head of Centre	1 (21)	2 (5,62)	3	21
58.	Dr. R.K. Singh	Pr. Scientist (Soil Fer.)	1 (5)	6 (21,38,39,54,56,57)	7	21,57
59.	Dr. A.K. Parandiyal	Sr. Scientist (Forestry)	3 (39,50,57)	2 (38,56)	5	57
60.	Dr. Ashok Kumar	Sr. Scientist (Ag. Eco.)	3 (62,66,67)	4 (21,38,39,56)	7	21
61.	Er. Shakir Ali	Scientist (SG) (Engg.)	1 (4)	4 (21,50,56,66)	5	4,21
62.	Er. B.K. Sethy	Scientist (SS) (Engg.)	2 (54,56)	3 (5,57,62)	5	57
63.	Mr. H.R. Meena	Scientist (Hort.)	1 (38)	3 (54,57,62)	4	57
Research Centre, Udhagamandalam						
64.	Dr. O.P.S. Khola	Head of Centre	2 (22,24)	1 (40)	3	40
65.	Dr. D.V. Singh	Sr. Scientist (Soil Fer.)	4 (5,25,58,63)	2 (22,62)	6	25,58
66.	Dr.(Ms.) P.Sundarambal	Sr. Scientist (Ag. Extn.)	2 (66,67)	1 (63)	3	-
67.	Dr. K. Kannan	Sr. Scientist (Agro.)	2 (23,62)	3 (5,24,63)	5	23
68.	Mr. R. Ragupathy	Scientist (SS) (Forestry)	-	1 (63)	1	-
69.	Er. (Ms.) V. Selvi	Scientist (SS) (Engg.)	-	5 (5,22,58,62,63)	5	58
70.	Er. D.C. Sahoo	Scientist (Engg.)	1 (40)	2 (25,66)	3	25,40
Research Centre, Vasad						
71.	Dr. R.S. Kurothe	Head of the Centre	2 (4,48)	2 (5,49)	4	4,49
72.	Dr. G.L. Bagdi	Sr. Scientist (Ag. Extn.)	1 (67)	1 (66)	2	-
73.	Mr. V.C. Pande	Scientist (SG) (Ag.Eco.)	2 (62,66)	6 (2,3,41,48,50, 67)	8	-
74.	Dr. D.R. Sena	Sr. Scientist (Engg.)	1 (49)	6 (2,4,44,48,51,66)	7	4,49
75.	Dr. A.K. Vishwakarma	Sr. Scientist (Agro.)	1 (41)	6 (2,3,5,44,48,62)	7	-
76.	Dr. B.K. Rao	Sr. Scientist (Engg.)	2 (3,50)	1 (41)	3	-
77.	Dr. Gopal Kumar	Scientist (Soil)	3 (2,5,51)	5 (41,44,48,50,62)	8	-

(Figures in parenthesis are serial number of on-going projects listed in these proceedings).

LIST OF PARTICIPANTS

1.	Dr. V.N. Sharda	Director	Chairman
CSWCRTI, DEHRADUN			
2.	Dr. G.P. Juyal	Head (H&E Division)	Member
3.	Dr. B.L. Dhyani	Head (HRD&SS Division)	Member
4.	Dr. O.P. Chaturvedi	Head (Plant Science Division)	Member
5.	Er. K.P. Tripathi	Principal Scientist (Engg.)	
6.	Er. C. Prakash	Principal Scientist (Engg.) & OIC (RCM Unit)	Member Secretary
7.	Dr. N.K. Sharma	Principal Scientist (Agro.)	
8.	Dr. P.R. Ojasvi	Principal Scientist (Engg.)	
9.	Dr. Harsh Mehta	Principal Scientist (Plant Breeding)	
10.	Dr. M. Madhu	Senior Scientist (Agro.)	
11.	Er. S.S. Shrimali	Senior Scientist (CAA)	
12.	Dr. Charan Singh	Senior Scientist (Forestry)	
13.	Dr. Bankey Bihari	Senior Scientist (Ag. Extn.)	
14.	Dr. Pradeep Dogra	Senior Scientist (Ag. Eco.)	Rapporteur
15.	Dr. Ambrish Kumar	Senior Scientist (Engg.)	
16.	Dr. D. Mandal	Senior Scientist (Soils)	
17.	Dr. J.M.S. Tomar	Senior Scientist (Forestry)	
18.	Mr. M. Muruganandam	Scientist (SS) (Fisheries)	
19.	Dr. A.C. Rathore	Scientist (SS) (Hort.)	
20.	Dr. J. Jayaprakash	Scientist (Forestry)	
21.	Er. S. Patra	Scientist (Engg.)	
22.	Mr. M. Shankar	Scientist (Soils)	
23.	Dr. K.K. Choudhary	Scientist (Soils)	
24.	Mr. N.M. Alam	Scientist (Ag. Stat.)	
25.	Dr.(Ms.)Sangeeta N.Sharma	Technical Officer (T-9)	Rapporteur
26.	Mr. Nirmal Kumar	Technical Officer (T-7-8)	Rapporteur
27.	Mr. S.K. Sinha	Technical Officer (T-5)	Rapporteur
RESEARCH CENTRE, AGRA			
28.	Dr. S.K. Dubey	Head of the Centre	Member
29.	Dr. P.K. Panda	Senior Scientist (Agro.)	
30.	Dr. A.K. Singh	Senior Scientist (Engg.)	
31.	Er. S.K. Srivastava	Scientist (Engg.)	
RESEARCH CENTRE, BELLARY			
32.	Dr. A. Raizada	Head of the Centre	Member
33.	Dr. S.K.N. Math	Principal Scientist (Soils)	
34.	Er. R.N. Adhikari	Principal Scientist (Engg.)	
RESEARCH CENTRE, CHANDIGARH			
35.	Dr. A.K. Tiwari	Head of the Centre	Member
36.	Dr.(Ms.) S.L. Arya	Principal Scientist (Ag. Eco.)	
37.	Dr. Pratap Singh	Principal Scientist (Agro.)	
38.	Dr. R.P. Yadav	Principal Scientist (Soils)	
39.	Dr. V.K. Bhatt	Senior Scientist (Engg.)	
40.	Dr. Ram Prasad	Senior Scientist (Hort.)	
41.	Dr. Pankaj Panwar	Senior Scientist (Forestry)	
42.	Dr.(Ms.) Sharmistha Pal	Scientist (Soils)	

RESEARCH CENTRE, DATIA			
43.	Dr. S.P. Tiwari	Head of the Centre	Member
44.	Dr. H. Biswas	Scientist (Soils)	
45.	Dr. P.P. Adhikary	Scientist (Soils)	
46.	Dr. M.N. Ramesha	Scientist (Forestry)	
RESEARCH CENTRE, KORAPUT			
47.	Dr. K.P. Gore	Head of the Centre	Member
48.	Er. B.S. Naik	Scientist (Engg.)	
49.	Mr. P. Jakhar	Scientist (Agro.)	
50.	Dr. D. Barman	Scientist (Soils)	
RESEARCH CENTRE, KOTA			
51.	Dr. S.N. Prasad	Head of the Centre	Member
52.	Dr. R.K. Singh	Principal Scientsit (Soils)	
53.	Dr. Ashok Kumar	Senior Scientist (Ag. Eco.)	
54.	Er. B.K. Sethy	Scientist (SS) (Engg.)	
55.	Mr. H.R. Meena	Scientist (Hort.)	
RESEARCH CENTRE, UDHAGAMANDALAM			
56.	Dr. O.P.S. Khola	Head of the Centre	Member
57.	Dr. K. Kannan	Senior Scientist (Agro.)	
58.	Mr. R. Ragupathy	Scientist (SS) (Forestry)	
59.	Er.(Ms.) V. Selvi	Scientist (SS) (Engg.)	
RESEARCH CENTRE, VASAD			
60.	Dr. R.S. Kurothe	Head of the Centre	Member
61.	Dr. G.L. Bagdi	Senior Scientist (Ag. Extn.)	
62.	Mr. V.C. Pande	Scientist (SG) (Ag. Eco.)	
63.	Dr. A.K. Vishwakarma	Senior Scientist (Agro.)	
64.	Dr. Gopal Kumar	Scientist (Soils)	