# PREAMBLE BY THE CHAIRMAN

The Director, CSWCRTI, Dehradun and Chairman of Institute Research Committee (IRC) welcomed the Heads of the Centres/Divisions and other participants to IRC meeting-2008. He highlighted the importance of this meeting in view of the increasing stress being laid on natural resource management all over the world.

The tradition of winning awards and recognitions by the scientists of the Institute and their felicitation by the IRC was continued in 2008 also. The prestigious Dr. Rajendra Prasad Puruskar of the Council for outstanding work in agricultural sciences in Hindi, shared by Dr. V.N. Sharda, Dr. G.P. Juyal and Dr. A.K. Sikka was heartily applauded by the house. The Rajiv Gandhi State Level Sadbhavana Award of the Rajiv Gandhi Forum, Orissa, for best educationist of the year and Rajbhasha Gaurav Samman of Bhartiya Rajbhasha Parishad were also bestowed upon Dr. V.N. Sharda during the year. Scientists of Research Centre Agra won first prize for scientific presentation at *Kendriya Aushidiya Evam Sugandh Paudha Sansthan*, Luckow. Ms. V. Selvi, of Research Centre Udhagamandalam won second prize in Ground Water Governance Course of International Water Management Institute, Colombo, Srilanka. Gold Medal of the Soil Conservation Society of India was conferred upon Dr. P.K. Mishra, Ex-Head, Research Centre, Bellary and Dr. R.K. Panda, formerly posted at Research Centre, Koraput, was awarded Fellowship of Institution of Engineers India, Sunabeda (Local Chapter).

Many scientists of the Institute provided foreign consultations or visited research organizations abroad under various programmes/projects. Dr. A.K. Tiwari, Head, Research Centre, Chandigarh and Dr. Ambrish Kumar of the Institute Headquarters visited Mongolia under a UNDP consultancy programme on capacity building in water harvesting for officers of Govt. of Mongolia. Dr. D.V. Singh visited Norman Borlaug Foundation, Michigan State University, USA., Dr.(Mrs.) S.L. Arya of Research Centre, Chandigarh visited Florida, USA under Agriculture Knowledge Initiative (AKI) project for training and Dr. K.P. Gore, Head, Research Centre, Koraput, participated in an International Conference at China. In the ensuing year more scientists are expected to be trained abroad under bilateral programme of NAIP.

The Institute has bagged several prestigious externally funded projects which include Macro Management of Agriculture (Rs.6.14 crores) funded by Ministry of Agriculture under NWDPRA, National Bamboo Mission Project (Rs. 65 lakhs) Ministry of Agriculture, NAIP Projects on Enhancement of Livelihood Security (Rs. 2.36 crores), Visioning, Policy Analysis and Gender (Rs.15 lakh) and Farmers Participatory Action Research Programme (Rs.50 lakhs) sponsored by the Ministry of Water Resources. Another NAIP funded project in collaboration with Indian Institute of Management, Ahmedabad and Delhi University has also been approved. The Chairman expressed happiness while informing the house that Research Centres of the Institute are also making efforts to be partners in other collaborative research projects and developing linkages with other research institutions. Datia Centre of the Institute is a partner in a project with Central Institute for Research on Goats, Makhdoom, Agra and Kanpur Agricultural University.

The Institute successfully organized 03 workshops during the year on Erosion Productivity Relationship, Impact Assessment of CPWRs and Hydrological Modelling. The Institute very ably conducted the visit of Parliamentary Standing Committee on Agriculture on 17$^{th}$ May, 2008 which was appreciated by one and all. The Committee lauded the past and present contributions of the Institute in the field of natural resource management and watershed development.

The Chairman emphasized upon the need for bringing out standard publications in reputed National as well as International journals by employing better analytical tools. The task of computerization of research data, which was one of the recommendations of the RAC and QRT, is nearing completion at all the Research Centres as well as Headquarters of the Institute. One set of data shall be kept in the library at the Institute Headquarters for use by any scientist of the Institute.

The Chairman appraised the house that the Government is seriously concerned about the stagnation in production in the agricultural sector. He stated that the agricultural sector registered a growth of 3% during 1996-97, which came down to 2% during the X Five Year Plan. One of the major factors responsible for fall in productivity is the least attention paid towards natural resource

management, which is essential for sustained productivity. Another major reason for decline in productivity is linked to declining allocation of funds for the development of the agriculture sector. Earlier 3.5% of GDP was spent on agriculture, but now only half i.e. 1.8% is being spent. Though the government subsidy has increased from 3% to 7% on various agricultural inputs, the benefits are not reaching at the grass root level. The Chairman quoted the case of Punjab where electricity was provided to farmers either free of cost or at very nominal charges as a result of which farmers used electric pumps indiscriminately resulting in depletion of ground water table. Now, in many areas, farmers of the State are facing water scarcity.

The Chairman further stated that the agriculture production is hovering around 210 million tonnes. By the year 2050, 500 million tonnes of food grains would be required, to meet the demand of 1700 million population. This is a challenging-task as the area under cultivation is reducing over the years due to urbanization and industrialization. Area available for phytomass production is 263 m ha. To meet the food requirement for 1700 million people by the year 2050, 318 m ha area would be required, which would far exceed the available area. The productivity would, therefore, has to be enhanced from the present 1.7 t/ha to 3.3 t/ha . Further, 120.7 m ha area is degraded, out of which water erosion alone covers 96 m ha. To check erosion by water, the Institute has to play a major role as it is essentially required for the development of the country. The watershed management programmes taken up earlier mainly focussed on water harvesting and *in situ* moisture conservation remained mostly neglected. Now, the focus has shifted from Conventional Agriculture to Sustainable Agriculture. Zero tillage is being advocated as an important component of Sustainable Agriculture. In India 2 m ha area is under zero tillage, which is to be increased to 3 m ha. However, adoption of zero tillage alone is not acceptable in many regions due to socio-economic and edaphic constraints. Therefore, adoption of zero tillage with mulching and proper crop rotation needs to be propagated. Residue management and development of suitable cropping systems for conservation agriculture are the areas which need to be researched upon and the importance of which is being increasingly recognized.

The Chairman concluded his address with the remark that the need of the hour is to shift from commodity based research to system based research, with a multidimensional approach (production to consumption) to achieve long term goal of sustainability in agricultural production.

# RECOMMENDATIONS OF RAC – 2008

The RAC made indepth review of different on-going projects through presentations by the Programme Implementers. It also examined the related documents and visited the experimental farm and selected technology transfer projects. The RAC made the following specific recommendations:

1. RAC was of view that Scientists should focus more on indepth scientific analysis with logical reasoning so that they may bring out more number of quantity publications in the journals of national and international repute having good impact factor.

2. The RAC opined that Institute has multi-disciplinary trained and experienced scientists but their interaction within the project team or among the different disciplines need to be strengthened with frequent meetings to analyze a given situation and probable impact of various alternatives in order to impose the treatments which are scientifically and logically acceptable. RAC stressed that the scientists of different disciplines working in a project should ensure their contribution which must reflect their duties and responsibility in the assigned research activities of the project.

3. Soil fertility build up through live green mulching and integrated soil nutrient management should be included in crop based experiments in a conservation mode. RAC has recommended that such experiments should be designed on long-term basis to analyse the integrated effects of various treatments on physico-chemical-biological properties of soils along with soil building management to achieve sustained productivity of the cropping systems.

4. RAC enunciated the use of Remote Sensing (RS) and Geographic Information System (GIS) technologies in watershed management, particularly in mapping of different attributes of the watershed and generating near real time input data. RAC stressed that CSWCRTI, Dehradun would initiate collaboration with Indian Institute of Remote Sensing (IIRS), Dehradun aiming at delineation and characterization, mapping and scaling, monitoring and evaluation in all nine NWDPRA watersheds located in different Agro-Ecological Regions (AER) by using RS & GIS techniques. Such initiative would help in evolving a standard procedure for efficient application of these new technologies for mapping the watershed and evaluation of various kinds of degraded lands as well.

5. RAC was of the opinion that depleting water table in different parts of the country is a national issue which should be addressed in research projects of the Institute. The project on groundwater recharge undertaken by the Institute should be analyzed in order to correlate the lithological formations, aquifer characteristics with the well yield and recharge efficiency. Project proposals on groundwater recharge through soil and water conservation structures befitting the mandate of the Institute should be encouraged.

6. RAC visited the externally funded projects on "Participatory Dissemination and Assessment of Land and Water Management Technologies for Livelihood Security in Rainfed Areas of North Western Himalayas" (TDET-MoRD) at Langha (Block Vikasnagar, Distt. Dehradun) and Farmers Participatory Action Research Programme (FPARP) at Village Rudrapur (Block Vikasnagar, Distt. Dehradun). It was suggested that bench mark information (Resource Inventory) should be developed and analyzed prior to implementation of suitable interventions. The cropping sequence should be evolved in such a way that rotation would cover soil nutrient building and efficient water productivity components. As far as income security is concerned, it should be ensured that the inputs given by the Institute are in the affordable range of the farmers.

7. The RAC was extremely happy to see the proposed plan of community based water resource development in Pasauli village under TDET (MoRD) Project. It was further noted that such kind of water tapping efforts from natural perennial spring is a unique approach which would enhance the income level of the farmers. In order to efficiently utilize the water in the proposed command area, a suitable soil specific crop sequence and water management plan should be developed.

8. The RAC appreciated the works of the Institute related to generating information for rehabilitation of degraded lands. The RAC suggested that experiments with proper information system should be undertaken on economic loss due to water erosion from degraded lands *vis-à-vis* treated watersheds in terms of tangible and intangible benefits.

# SALIENT RECOMMENDATIONS OF IRC MEETING – 2008

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)**

   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)**

   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)**

   d. Contribution of farmers in the demonstrated technology packages must be substantially realized in subsequent cropping seasons.

   **(Action: 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)**

   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)**

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)**

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)**

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)**

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)**

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 )**

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 )**

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)**

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 TAKEN ON
## "SALIENT RECOMMENDATIONS OF IRC MEETING – 2007"

| Sl. No. | Action Assigned | Action Taken Report |
|---|---|---|
| 1. | Dr. K.P. Gore, Head, Research Centre, Koraput must ensure that the map of NEH region is completed by January 31, 2008, positively. Dr. G.P. Juyal, Head, H&E Division should complete the work of watershed Atlas by Feb. 29, 2008. (Action: Dr. K.P. Gore and Dr. G.P. Juyal) | The assigned work has been completed and watershed Atlas has been published. |
| 2. | Inspite of repeated reminders, Head, H&E Division could not submit the document 'Fifty Years Research of Soil & Water Conservation'. The document must be submitted by the Head, H&E Division by January 31, 2008 with no further extension. Heads of Research Centres, Agra and Datia should immediately submit the Executive Summary of their Centre's document. The document of Research Centre, Chandigarh will serve as a model for the other Centres. Chandigarh Centre should submit the revised document by January 10, 2008 to the Headquarters, which will scrutinize the document by January 25, 2008 and send the CD to all Research Centres so that they can change / modify their respective documents accordingly by March 31, 2008. The Headquarters would check the document by April 30, 2008 and send it back to all Research Centres for final printing. (Action: All Heads of Research Centres / Divisions and RCM Unit) | The final revised document for including all R&D information of soil and water conservation carried out by other organizations, State Departments etc. has been assigned to Research Centres Agra, Datia and Vasad to submit by Jan. 20, 2009 positively. |
| 3. | Documents of potential technologies submitted by the Research Centres to the Headquarters may be scrutinized by March 31, 2008 and sent back to respective Research Centres for final revision. Research Centres should publish their documents by May 31, 2008. (Action: All Heads of Research Centres / Divisions and RCM Unit) | Since there was no uniformity in the pattern of write-ups which needed major revision, a meeting was held at the Headquarters during July 22-23, 2008 to discuss on uniformity of write-ups. Now, it has been assigned to all Heads of Research Centres/Divisions for printing the document of all potential technologies by Jan. 31, 2009. |
| 4. | In order to make research data of concluded projects available to the Institute scientists, it is necessary that the data should be computerized. The status of data on rainfall, runoff, soil loss, vegetation change, plant parameters, crop yield etc. should be submitted by all the Research Centres and Divisions at Headquarters by February 29, 2008, followed by its computerization by June 30, 2008. In order to complete the computerization of data within the stipulated time, if required, services of outside sources may be taken on hire basis. (Action: All Heads of Research Centres / Divisions) | Major part of computerization of data has been completed. However, remaining part for computerization of data has been assigned to Heads of Research Centres/Divisions to complete by Jan. 20, 2009 which should be in a properly bound form for the users. |
| 5. | All the Research Centres of the Institute along with SS&A Division at the Headquarters must work out the loss in productivity and production of all the predominant rainfed crops due to water erosion in the states assigned to each Centre under the Soil Loss Tolerance Limit project. Since the issue is of National priority, therefore this exercise should be completed within two months and report submitted by Feb. 29, 2008 for onward submission to the Council. (Action: All Heads of Research Centres / SS&A Division) | Action has been taken. |

| | | |
|---|---|---|
| 6. | It should be ensured by each Principal Scientist and Senior Scientist that he/she should be leader in at least two projects and each Scientist (Sr. Scale) and Scientist in atleast one project.<br>(Action: All Scientists and Heads of Centres/ Divisions) | It has been taken into consideration during the presentation and discussion of projects in the IRC meeting. |
| 7. | All Centres should have requisite knowledge for running various runoff and erosion models such as SWAT, WEPP, AGNPS, CANWAT, HSPF etc. Scientists from every Centre including the Headquarter should get acquainted with at least one of these models and operationalize to share their expertise with other scientists. Models to be operationalized at different Centres are as follows:<br>- Artificial Intelligence Tools : Dehradun (Dr. P.R. Ojasvi & team)<br>- SWAT : Chandigarh (Dr. V.K. Bhatt & Dr A.K. Tewari)<br>- CANWAT : Koraput (Dr. R.K. Panda)<br>- Kineorose II : Vasad (Dr. D.R. Sena & Dr. R.S. Kurothe)<br>- HSPF : Kota (Er. Shakir Ali)<br>Data required for running the model should be collected by the scientist(s) of respective Centres and Headquarters. Workshop should be convened after 6 months to get acquainted with the models and upgrade the skills in operationalizing them. (Action: All Concerned) | A workshop to get acquainted with the models was held at the Institute Headquarters on Dec. 3-4, 2008. An another workshop will be held in Feb., 2009 to review the progress of work at each Centre and test run for all the models using the global data set. The outcome of the models tested and validated on actual datasets in different agro-climatic regions will be discussed in the workshop proposed in Oct., 2009. |
| 8. | Dr. D.R. Sena should visit Research Centres at Bellary, Udhagamandalam and Koraput before March 31, 2008 for checking the procedure of data collection and suggest appropriate methods for computing ground water recharge.<br>(Action: Dr. D.R. Sena, Scientist (SS), Vasad) | The assigned work has been completed. |
| 9. | Reports and findings of Core Projects should be submitted by the concerned leaders at Research Centres one month in advance to the Core Project Leader otherwise the name of the Centre will be deleted from the Core Project. Members of the core project team should meet one day earlier before the actual IRC Meeting to discuss the complete presentation.<br>(Action: All Core Project Teams at different Research Centres & Heads) | It is being followed however, it has been advised to all core project teams to follow it in future also. |
| 10. | All scientists should ensure submission of atleast two research papers every year to the competent authority for approval to publish in refereed International / National journals.<br>(Action: All Scientists & Heads) | It has been advised to all Heads to ensure that scientists of their Research Centres/Divisions submit good research papers for publication in refereed International / National Journals. |
| 11. | Monthly Progress Reports (MPRs) and Quarterly Progress Reports (QPRs), which are being submitted by Research Centres / Divisions for onward transmission to ICAR, are not up to the mark. The reporting should be well planned and presented in a quantifiable manner. (Action: All Heads of Research Centres / Divisions) | Actions are being taken and instructions have been given to all Heads of Research Centres / Divisions to submit the Monthly Progress Reports (MPRs) in quantifiable manner with economics. |
| 12. | The Bulletin on SLTL under different agro-ecological regions of India should be published by 29th February, 2008. Digital copies of SLTL maps of all the states should be provided to all the Research Centres.<br>(Action : Dr. D. Mandal, Scientist (SS), HRD&SS Division ) | Action has been taken and the Bulletin has been completed. |
| 13. | Collection of socio-economic data from Sukhomajri watershed may be restarted. Data collected earlier upto 2002 by Dr Y Agnihotri may be treated as benchmark and data for the period 2002 to 2007 may be interpolated.<br>(Action: Head, Research Centre Chandigarh / Dr S.L. Arya) | Data collection has been restarted and analyzed. |

# 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. A. Raizada)

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 TRANSER (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. | Surface hydrologic response estimation using GIS. | S.S. Shrimali | Hydrology & Engineering, Dehradun | 2002 | 2009 | To be concluded |
| Comments: Project is again extended for one year till 2009. | | | | | | |
| 2. | Delineation and characterization of Mahi ravines using remote sensing and GIS in terms of resource potential planning. | Gopal Kumar<br>D.R. Sena<br>V.C. Pandey<br>H.B. Singh | Vasad | 2009 | 2012 | To be continued<br>**(New Project)** |
| Comments: Decision rule may be formulated in advance for proper delineatinon of affected and non-affected areas by ravines. Three time frames may be taken for assessment of rate of ravine extension along Mahi river. (Action: Dr. Gopal Kumar) | | | | | | |

### 1.3: SOIL EROSION PROCESSES AND MODELS

| | | | | | | |
|---|---|---|---|---|---|---|
| 3. | Development and validation of runoff and erosion prediction models in different agro-ecological regions. | V.N. Sharda<br>P.R. Ojasvi<br>Ambrish Kumar<br>S. Patra | Hydrology & Engineering, Dehradun | 2003 | 2009 | To be concluded<br>**(Core Project)** |
| | | A.K. Tiwari<br>V.K. Bhatt | Chandigarh | | | |
| | | Shakir Ali | Kota | | | |
| | | R.S. Kurothe<br>D.R. Sena | Vasad | | | |
| Comments: Project is again extended for one year till 2009. Names of Dr. Ambrish Kumar and Er. S. Patra are included as associates at Dehradun. Names of Dr. V.K. Bhatt and Dr. D.R. Sena are included as associates at Research Centres Chandigarh and Vasad, respectively. Data and software requirements for operation of each model may be finalized by respective Co-PIs and communicated to all Centres by December 31, 2008. A workshop may be held during last week of Feb., 2009 at Vasad Centre to review the progress of work at each Centre and test run for all the models using the global data set. Sensitive parameter set for each model may also be identified by June 30, 2009. The outcome of the models tested and validated on actual datasets in different agro-climatic regions may be finalized by Sept., 2009 for discussion in the meeting proposed in October, 2009 at Chandigarh Centre. The final conclusions and recommendations emerging out of the project should be presented in the next IRC meeting by the respective Co-PIs. Project at Datia Centre is concluded due to retirement of Dr. V.S. Katiyar and RPF III for Datia Centre should be submitted by Dr. P.R. Ojasvi by March 31, 2009. (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 |
|---|---|---|---|---|---|---|
| 4. | Erosion-productivity relationships for evaluating vulnerability and resiliency of soils under different agro-climatic regions of India. | D. Mandal<br>S. Patra<br>N.K. Sharma<br>P. Dogra | HRD&SS, Dehradun | 2008 | 2014 | To be continued (**Core Project**) |
| | | Pramod Jha<br>A.K. Singh<br>S.K. Dubey<br>R.K. Dubey | Agra | 2009 | | |
| | | S.K.N. Math<br>S.L. Patil<br>R.N. Adhikari | Bellary | 2009 | | |
| | | R.P. Yadav<br>Pratap Singh<br>A.K. Tiwari | Chandigarh | 2009 | | |
| | | H. Biswas<br>Dev Narayan | Datia | 2009 | | |
| | | D. Barman<br>P. Jakhar<br>B.S. Naik | Koraput | 2009 | | |
| | | R.K. Singh<br>S.N. Prasad<br>B.K. Sethy | Kota | 2009 | | |
| | | D.V. Singh<br>V.Selvi<br>K. Kannan | Udhagamandalam | 2009 | | |
| | | Gopal Kumar<br>R.S. Kurothe<br>H.B. Singh | Vasad | 2009 | | |
| Comments: Core group team should finalize plot size, slope etc. required for the study. Recommendations of workshop held in March, 2008 on this project may be provided to the leaders of all Research Centres by Dr. D. Mandal. (Action: Dr. D. Mandal and leaders of all Research Centres) | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 5. | Effect of stone check dams on resource conservation in black soils under concentrated flow condition: Simulated study in tilting hydraulic flume. | R.N. Adhikari<br>S.K.N. Math | Bellary | 2007 | 2009 | To be concluded |
| Comments: Er. R.N. Adhikari will be the leader of project and names of Er. A.K. Singh and Dr. P.K. Mishra are deleted. The progress of work needs to be speeded up to achieve the objectives of the project. Study should be completed in the stipulated time. (Action: Er. R.N. Adhikari) | | | | | | |
| 6. | Modified soil erodibility K factor for the soil in the Bundelkhand region, India. | P.P. Adhikary | Datia | 2009 | 2010 | To be continued<br>**(New Project)** |
| Comments: Instead of NBSSLUP data of 10 km x 10 km, SAUs data of 1 m x 1 m, 5 m x 5 m etc. i.e. of different sizes and all textural classes may be used. For validating the estimated 'K' values, results of Research Farm of the Centre may be used. (Action: Dr. P.P. Adhikary) | | | | | | |

## P-2: CONSERVATION MEASURES FOR SUSTAINABLE PRODUCTION SYSTEMS

### 2.1: RESOURCE CONSERVATION MEASURES FOR ARABLE LANDS

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|---|---|---|---|---|---|---|
| 7. | Yield maximization and resource conservation through organic input management. | B.N. Ghosh<br>N.K. Sharma<br>Pradeep Dogra | Soil Science & Agronomy, Dehradun | 2007 | 2014 | To be continued |
| Comments: Economics of the cropping system may be worked out taking into account inputs and cost of conservation measures. (Action: Dr. B.N. Ghosh) | | | | | | |
| 8. | Evaluation of organic farming vis-à-vis inorganic farming for resource conservation and sustained productivity under prominent cropping system. | K.S. Dadhwal<br>N.K. Sharma<br>S. Patra | Soil Science & Agronomy, Dehradun | 2008 | 2015 | To be continued |
| 9. | Impact of *okra*-maize intercropping on resource conservation and productivity. | N.K. Sharma<br>D. Mandal<br>Ambrish Kumar | Soil Science & Agronomy, Dehradun | 2008 | 2013 | To be continued |
| Comments: It may be ensured that plots are made uniform in terms of slope, shape etc. after wheat harvesting for re-calibration. Data of 5-6 events may be taken before sowing of kharif – 2009 to develop new and correct calibration equations. (Action: Dr. N.K. Sharma) | | | | | | |
| 10. | Evaluating productivity potential of *bhimal* (*Grewia optiva*) along with field crops. | Harsh Mehta<br>K.S. Dadhwal | Plant Science, Dehradun | 2005 | 2015 | To be continued |
| Comments: As per farmers' preference, lopping may be carried out at the rate of 75% uniformly at all locations to maintain compatibility. (Action: Dr. Harsh Mehta) | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 11. | Productivity enhancement in fruit and flower based two tier horticulture system through integrated nutrient management and mulching. | A.C. Rathore<br>B.N. Ghosh | Plant Science, Dehradun | 2008 | 2015 | To be continued |
| Comments: Annual incremental data for plant growth parameter (since the inception of plantations) may be presented in the next IRC meeting. (Action: Dr. A.C. Rathore) | | | | | | |
| 12. | Resource conservation and sustainable crop production using bio-fertilizers and organics in degraded Shiwaliks. | Pawan Sharma<br>Pratap Singh<br>Ram Prasad<br>S.L. Arya | Chandigarh | 2007 | 2011 | To be continued |
| Comments: Statistical analysis (CD) of main plot and sub plot may be checked and corrected to saggrigate the effect of main and sub-treatments. (Action: Dr. Pawan Sharma) | | | | | | |
| 13. | Conservation tillage for resource management and higher production from Shiwaliks. | R.P. Yadav<br>Pratap Singh<br>Pawan Sharma | Chandigarh | 2009 | 2015 | To be continued<br>**(New Project)** |
| 14. | Effect of integrated nutrient management on soil properties under aonla based agri-horti system. | H. Biswas<br>Dev Narayan | Datia | 2005 | 2009 | To be concluded |
| Comments: Infiltration data needs to be checked as there are discrepancies in the infiltration rate and bulk density across the treatments. Economics of producing organic fertilizer as well as complete treatment may be worked out and presented in the next IRC meeting. (Action: Dr. H. Biswas) | | | | | | |
| 15. | Intercropping and tillage practices for sustainable production under rainfed condition in Bundelkhand. | Dev Narayan<br>H. Biswas | Datia | 2006 | 2010 | To be continued |
| Comments: Name of Dr. V.S. Katiyar is deleted. The Research Farm needs to be properly fenced for protection of crops from blue bulls. (Action: Dr. Dev Narayan) | | | | | | |
| 16. | *In situ* moisture conservation practices under aonla based agro-forestry system for sustainable production in red soils of Bundelkhand. | Dev Narayan<br>H. Biswas | Datia | 2009 | 2017 | To be continued |
| Comments: Due to construction of Express way / Highway along the project site, the gauging structures could not be constructed. Therefore, the location of project site should be changed. Year of start and completion of the project are changed to 2009 and 2017, respectively. Gauging devices should be installed by March 31, 2009. (Action: Dr. Dev Narayan) | | | | | | |
| 17. | Conserving resources and augmenting livelihood of small holders through multi-tier cropping systems in tribal dominant Eastern Ghats of Orissa. | P. Jakhar<br>B.S. Naik | Koraput | 2005 | 2010 | To be continued |
| Comments: Project is extended for two years till 2010 to implement the treatments. Runoff / soil loss data may be checked as the coefficient of variation across treatments is almost constant for each crop. (Action: Mr. P. Jakhar) | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 18. | Evaluating the different crop combinations for strip cropping in terms of soil, nutrient losses and their productivity in uplands of Eastern Ghats. | P. Jakhar<br>B.S.Naik<br>D. Barman<br>K.P. Gore | Koraput | 2009 | 2011 | To be continued<br>**(New Project)** |
| Comments: Project may be conducted at a single location only with three replications and three strips cropping treatments. Opinion of farmers may be taken while selecting crops. Horse bean crop may be deleted from project. Only recommended doses of FYM and fertilizers may be taken. Economics may be worked out accordingly. (Action: Mr. P. Jakhar) | | | | | | |
| 19. | Resource conservation by alley cropping in shifting cultivated degraded lands of Eastern Ghat. | H. Gowda<br>P. Jakhar<br>D. Barman<br>K.P. Gore | Koraput | 2009 | 2013 | To be continued<br>**(New Project)** |
| Comments: Trenching may be used in place of width component. The number of plots should be 16 (with/without trench x two plot species x two crop species x two slopes). All soil properties and soil loss may be studied. Pruning may be started after two years. (Action: Mr. H. Gowda) | | | | | | |
| 20. | Effect of soil amendments on surface cracks in black soils of south eastern Rajasthan. | R.K. Singh<br>S.N. Prasad<br>Ashok Kumar | Kota | 2006 | 2009 | To be concluded |
| Comments: Dr. R.K. Singh will replace Dr. J. Somasundaram as the leader of project. | | | | | | |
| 21. | Green manuring for resource conservation, soil health and productivity in fallow mustard cropping sequence. | S.N. Prasad<br>R.K. Singh<br>Shakir Ali<br>Ashok Kumar | Kota | 2008 | 2010 | To be continued |
| 22. | Soil health, productivity and conservation under different nutrient management systems for export oriented vegetable crops in the Nilgiris. | D.V. Singh<br>M. Madhu<br>V. Selvi | Udhagamandalam | 2006 | 2009 | To be concluded<br>**(Adhoc project of ICAR)** |
| Comments: Project is extended for one year till 2009 to utilize the remaining amount. Economics may be worked out. (Action: Dr. D.V. Singh) | | | | | | |
| 23. | Techniques for establishment of tea on terrace riser in the Nilgiris. | O.P.S. Khola<br>D.V. Singh<br>V. Selvi | Udhagamandalam | 2008 | 2012 | To be continued |
| Comments: Dr. D.V. Singh will replace Dr. Gopal Kumar as first associate. | | | | | | |
| 24. | Improvisation of terraces of farmers' fields in the Nilgiris. | M. Madhu | Udhagamandalam | 2008 | 2010 | To be continued |
| Comments: Name of Dr. Gopal Kumar is deleted. | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 25. | Optimum tillage and organic manuring practices for crop production and resource conservation in the Nilgiris. | O.P.S. Khola<br>K. Kannan | Udhagamandalam | 2008 | 2011 | To be continued |
| Comments: Name of Dr. P. Murlidharan is deleted and Dr. O.P.S. Khola will be the leader of this project. Name of Dr. K.Kannan is included as an associate. | | | | | | |

**2.2: RESOURCE CONSERVATION MEASURES FOR NON-ARABLE LANDS**

| | | | | | | |
|---|---|---|---|---|---|---|
| 26. | Evaluation of the agro-forestry systems for marginal lands in Doon valley. | Charan Singh<br>N.K. Sharma<br>M. Shankar<br>Pradeep Dogra | HRD&SS, Dehradun | 2001 | 2010 | To be continued |
| Comments: Mr. M. Shankar will replace Dr. Ratan Singh as second associate. Recommended 75% lopping of Bhimal and Paolonia may be implemented. In place of black gram, a suitable grass species may be taken after consultation with FRI experts and approval may be taken in local seminar. (Action: Dr. Charan Singh) | | | | | | |
| 27. | Silvipastoral systems under various management practices for degraded lands. | Charan Singh<br>A. Raizada | HRD&SS, Dehradun | 1996 | 2009 | To be concluded |
| Comments: Project should be concluded in the year 2009. Effect of pollarding on root parameters may be recorded. (Action: Dr. Charan Singh) | | | | | | |
| 28. | Fuelwood and fodder production from densified plantations on old riverbed land. | A. Raizada<br>Charan Singh<br>B.N. Ghosh | Plant Science, Dehradun | 1997 | 2016 | To be continued |
| 29. | Evaluating the performance and developing techniques for enhancing growth and seed yield of Jatropha curcas in degraded lands of sub-humid Himalayas. | J. Jayaprakash<br>D. Mandal | Plant Science Dehradun | 2006 | 2015 | To be continued |
| Comments: Since the new site selected has no water logging problem hence, the original intercrops suggested may be retained. Phosphorus content data (%) of Jatropha leaves may be checked. (Action: Dr. J. Jayaprakash) | | | | | | |
| 30. | Enhancement of guava productivity through canopy management and mulching in rainfed bouldery riverbed lands. | A.C. Rathore<br>B.N. Ghosh | Plant Science, Dehradun | 2008 | 2015 | To be continued |
| Comments: Title of the project may be modified since new intercrops have been taken. A note on fine root dynamics may be prepared in consultation with Dr. A. Raizada and presented in next IRC meeting and sent to all Research Centres. (Action: Dr. A.C. Rathore) | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 31. | Evaluation of traditional minor millet based agro-forestry systems under recommended agri-silvicultural practices of North-Western Himalayas. | Harsh Mehta<br>J.M.S. Tomar<br>D. Mandal | Plant Science, Dehradun | 2009 | 2018 | To be continued<br>**(New Project)** |
| Comments: Recommended spacings and management practices may be followed for individual tree species. Recommended varieties of millets may be taken and more stress may be given on conservation aspects. For setting up of the experiment, field may be divided with compartments by planting vegetative barrier of a single species. To simulate farmers' preferred practice trees may be planted on vegetative bunds. ( Action: Dr. Harsh Mehta) | | | | | | |
| 32. | Evaluation of fruit species vis-à-vis conservation techniques for salt affected black soils of semi-arid tropic regions. | S.K.N. Math<br>R.N. Adhikari | Bellary | 2005 | 2015 | To be continued |
| Comments: Dr. S.K.N. Math and Er. R.N. Adhikari will be the leader and associate, respectively and names of Mr. D. Ramajayam and Mr. B. Mondal are deleted. Annual increment of plant growth may be presented. (Action: Dr. S.K.N. Math) | | | | | | |
| 33. | Study on effect of *in situ* moisture conservation measures on runoff, soil loss and yield of maize crop. | Pratap Singh<br>V.K. Bhatt<br>Pawan Sharma | Chandigarh | 2007 | 2009 | To be concluded |
| Comments: Yield of wheat crop in maize-wheat crop sequence may be recorded since the effect of moisture conservation would be visible in wheat crop . Economics of ridge and furrow method of sowing may be worked out and presented in the next IRC meeting. (Action: Dr. Pratap Singh) | | | | | | |
| 34. | Peach based agri-horticulture land use system for degraded Shiwaliks. | Ram Prasad<br>Pratap Singh<br>R.P. Yadav<br>S.L. Arya | Chandigarh | 2008 | 2015 | To be continued |
| 35. | Bio-engineering measures for resource conservation and management in red sloppy lateritic soils of Orissa. | B.S. Naik<br>P. Jakhar<br>H. Gowda | Koraput | 2008 | 2011 | To be continued |
| Comments: Leader of project must complete construction of gauging structures and conservation measures before March, 2009 without loss of more time and project should be completed on time. Name of Dr. R.K. Panda is deleted. (Action: Er. B.S. Naik) | | | | | | |
| 36. | Evaluation of different under utilized fruit species with varying inter-space managements in Chambal ravines. | H.R. Meena<br>A.K. Parandiyal<br>R.K. Singh<br>Ashok Kumar | Kota | 2006 | 2015 | To be continued |
| Comments: Dr. R.K. Singh will replace Dr. J.S. Somasundaram as second associate. Common name of tree/shrub and grass species should also be mentioned during presentation as desired by RAC members. (Action: Mr. H.R. Meena) | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 37. | Evaluation of promising oilseed tree species under silvi-pastoral system for rehabilitation of Chambal ravines. | A.K. Parandiyal<br>R.K. Singh<br>Ashok Kumar | Kota | 2008 | 2015 | To be continued |
| Comments: Dr. R.K. Singh will replace Dr. J. Somasundaram as first associate. | | | | | | |
| 38. | Studies on afforested Shola species and swamps in the Nilgiris. | R. Ragupathy<br>M. Madhu<br>D.V. Singh | Udhagamandalam | 2005 | 2009 | To be concluded<br>**(HADP Funded)** |
| Comments: Project is extended for one year till 2009 to collect the data which should be analysed and presented in the next IRC meeting. Entire shola forest area may be classified. For drawing proper conclusion regarding water quality due to various land uses, there is need to identify the exact location of the sampling done, its catchment area and the prevalent landuse within the area must be ascertained. All these may be shown on a map. Balance amount of Rs. One lakh should be taken from HADP. Dr. D.V. Singh will replace Dr. P. Murlidharan as second associate. (Action: Mr. R. Ragupathy) | | | | | | |
| 39. | Effectiveness of different bio-engineering measures in new tea plantation in the Nilgiris. | D.C. Sahoo<br>M. Madhu | Udhagamandalam | 2007 | 2010 | To be continued |
| Comments : Name of Dr. P. Murlidharan is deleted. | | | | | | |
| 40. | Integrated management of soil health for sustainable production in the Nilgiris. | D.V. Singh<br>D.C. Sahoo | Udhagamandalam | 2008 | 2010 | To be continued |
| Comments: Dr. D.V. Singh will replace Dr. Gopal Kumar as leader of project and he should ensure that treatments are imposed positively in 2009. (Action: Dr.D.V.Singh) | | | | | | |
| 41. | Enhancing productivity of non-arable ravine lands by plantation of cashew (*Anacardium occidentale* L.) with intercropping systems. | H.B. Singh<br>M.L. Gaur<br>Gopal Kumar<br>V.C. Pande | Vasad | 2008 | 2022 | To be continued |
| Comments: Dr. Gopal Kumar will replace Dr. S.P. Tiwari as second associate. | | | | | | |

## P-3: HYDROLOGICAL BEHAVIOUR OF WATERSHEDS FOR CONSERVATION PLANNING

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

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 42. | Hydrological behaviour of small watersheds and sustainability of production systems. | V.N. Sharda<br>C. Prakash<br>A. Raizada<br>N.K. Sharma | Hydrology & Engineering, Dehradun | 1999 | 2010 | To be continued |
| Comments: Percentage of treated area in the three watersheds may be worked out. (Action: Dr. V.N. Sharda) | | | | | | |
| 43. | Testing of hydrological instruments. | K.P. Tripathi<br>S. Patra | Hydrology & Engineering, Dehradun | 2005 | 2009 | To be concluded |
| 44. | Assessment of impact of climate change on hydrology and crop production in the selected watersheds. | K.P. Tripathi<br>D.R. Sena<br>S. Patra<br>Gopal Kumar<br>H.B. Singh | Hydrology & Engineering, Dehradun | 2007 | 2011 | To be continued<br>**(NPCC Funded)** |
| Comments: Dr. Gopal Kumar will replace Dr. S.P. Tiwari at Vasad Centre. List of parameters related to climate change may be prepared and sent to all Research Centres for collecting the data from on-going projects. (Action: Er. K.P. Tripathi) | | | | | | |
| 45. | Hydrological evaluation of recommended forest trees in Himalayan foothills. | A. Raizada<br>Ambrish Kumar<br>Charan Singh<br>B.N. Ghosh | Plant Science, Dehradun | 2004 | 2018 | To be continued |
| Comments: Proper calibration equations should be developed with control account for the extent of heterogeneity between the plots in terms of runoff and soil loss as compared to the control plot. (Action: Dr. A. Raizada) | | | | | | |
| 46. | Combating land degradation through cycling of organic matter under different land use systems. | Pramod Jha<br>K.P. Mohapatra | Agra | 2007 | 2009 | To be concluded |
| 47. | Hydrological response to micro-catchments under different land uses with vegetation manipulation. | V.K. Bhatt<br>A.K. Tiwari<br>Pawan Sharma | Chandigarh | 2005 | 2012 | To be continued |

| 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<br>D.R. Sena<br>V.C. Pande<br>Gopal Kumar<br>H.B. Singh | Vasad | 2004 | 2012 | To be continued |
| Comments: Dr. Gopal Kumar will replace Dr. S.P. Tiwari as associate. Data after removal of riparian vegetation may be collected 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<br>R.S. Kurothe | Vasad | 2005 | 2009 | To be concluded |
| Comments: Name of Dr. S.P.Tiwari is deleted. Project is again extended for one year till 2009 in view of difficulties experienced in fabrication of instruments.The leader must ensure the completion of project positively by 2009. (Action: Dr. D.R. Sena) | | | | | | |
| 50. | Hydrologic and economic evaluation of Bamboo plantations in gullied lands under major ravines of India. | M.L. Gaur<br>Gopal Kumar<br>V.C. Pande | Vasad | 2008 | 2011 | To be continued (**National Bamboo Mission**) |
| | | K.P. Mohapatra<br>S.K. Dubey<br>A.K. Singh | Agra | | | |
| | | A.K. Parandiyal<br>Shakir Ali | Kota | | | |
| Comments: Dr. Gopal Kumar will replace Dr. S.P. Tiwari as first associate at Vasad Centre. Name of Er. A.K. Singh is included as second associate at Agra Centre. Progress of work at Research Centre, Kota is very tardy compared to other centres and leader at Kota Centre is directed to complete the work by March, 2009. The construction of gauging station and plantation work at Kota Centre should be completed before the onset of monsoon, 2009. (Action : Dr. A.K. Parandiyal) | | | | | | |

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

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 51. | Effect of conservation structures on ground water recharge. | D.R. Sena<br>R.S. Kurothe<br>V.C. Pande | Vasad | 2001 | 2009 | To be concluded<br>**(Core Project)** |
| | | V.K. Bhatt<br>A.K. Tiwari<br>R.P. Yadav | Chandigarh | | | |
| | | H. Biswas | Datia | | | |
| | | Shakir Ali<br>R.K. Singh<br>B.K. Sethy | Kota | | | |
| | | B.S. Naik | Koraput | 2004 | | |
| | | R.N. Adhikari<br>S.K.N. Math | Bellary | 2004 | | |
| | | V. Selvi<br>D.V. Singh | Udhagamandalam | 2004 | | |
| Comments: Project is extended for one year till 2009 to analyse the data pertaining to study. Name of Dr. S.P.Tiwari is deleted at Vasad Centre. Name of Dr. V.S.Katiyar is deleted and Dr. H. Biswas will work as leader at Datia Centre. Dr. B.S. Naik will replace Dr. R.K. Panda as leader at Koraput Centre. Name of Er. A.K. Singh is deleted at Bellary Centre. (Action: Project Leaders at all study sites) | | | | | | |
| 52. | Design and development of site specific artificial groundwater recharge filters. | Gopal Kumar<br>D.R. Sena | Vasad | 2009 | 2012 | To be continued<br>**(New Project)** |
| Comments: The cost of recharge filter may be economized keeping in view the end users of the filters. Work done by Central Ground Water Board may be examined. (Action: Dr. Gopal Kumar) | | | | | | |

### 3.3: WATER HARVESTING

| | | | | | | |
|---|---|---|---|---|---|---|
| 53. | Hydrological evaluation of CBT in Himalayan foothills. | Ambrish Kumar<br>N.K. Sharma<br>B.L. Dhyani | HRD&SS, Dehradun | 2007 | 2009 | To be concluded |
| Comments: Moisture status at wheat harvesting in donar and recipient area at 2% slope is very low (below wilting point). Data may be checked and water use efficiency needs to be estimated. (Action: Dr. Ambrish Kumar) | | | | | | |
| 54. | Study on the effect of water quality on water use efficiency in Agra watershed. | S.K. Srivastava<br>Pramod Jha | Agra | 2007 | 2009 | To be concluded |
| Comments: The results may be supported with statistical analysis and presented in the next IRC meeting. (Action: Er. S.K. Srivastava) | | | | | | |

## P-4 REHABILITATION OF AREAS AFFECTED BY MASS EROSION

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

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 55. | To study the performance of special types of spurs through laboratory studies (in hydraulic flume) | G.P.Juyal<br>S.Patra | Hydrology & Engineering, Dehradun | 2009 | 2011 | To be continued<br>**(New Project)** |
| Comments: Discharge at the inlet of the flume may be measured by installing appropriate device at the inlet pipe. (Action: Dr. G.P. Juyal) | | | | | | |
| 56. | Characterization of soil stability and its improvement in mass erosion prone areas of lower Shiwalik. | R.P. Yadav<br>V.K. Bhatt<br>A.K. Tiwari<br>Ram Prasad<br>Pawan Sharma | Chandigarh | 2007 | 2009 | To be concluded |
| Comments: Soil analysis must be presented in quantified terms in the next IRC meeting. Map showing location of study sites (alongwith photograph of each site) and contributing area may also be presented. All data must be interpreted as per project objectives. (Action: Dr. R.P. Yadav) | | | | | | |
| 57. | Cost effective conservation measures for management of medium and deep ravinous lands | B.K. Sethy<br>A.K. Parandiyal<br>Shakir Ali<br>Ashok Kumar<br>R.K. Singh | Kota | 2004 | 2012 | To be continued |
| Comments: Dr. R.K. Singh will replace Dr. J. Somasundaram as associate. | | | | | | |
| 58. | Productive utilization of ravines through introduction of horticulture and improved planting materials. | A.K. Parandiyal<br>R.K. Singh<br>B.K. Sethy<br>H.R. Meena | Kota | 2005 | 2010 | To be continued |
| Comments: Dr. R.K. Singh will replace Dr. J. Somasundaram as first associate. | | | | | | |
| 59. | Landslide characterization and management plan for the Nilgiris. | D.V. Singh<br>V. Selvi<br>D.C. Sahoo | Udhagamandalam | 2005 | 2009 | To be concluded<br>**(HADP Funded)** |
| Comments: Weightage and priority may be assigned to different landslides covering factors in GIS environment in an integrated manner to identify the causative factors. Factors may be prioritized and cumulative picture in the study may be drawn. (Action: Dr. D.V. Singh) | | | | | | |
| 60. | Field based estimation of stream bank erosion for different ephemeral channels in Mahi ravines. | M.L. Gaur | Vasad | 2007 | 2009 | To be concluded |
| Comments : Name of Dr. S.P.Tiwari is deleted. Data should be streamlined to arrive at a logical conclusion. The study should be limited to the mandate of the Institute. (Action : Dr. M.L. Gaur) | | | | | | |

## P-5: PARTICIPATORY INTEGRATED WATERSHED MANAGEMENT

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

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 61. | Resource conservation and management in Netrenahalli watershed, Chitradurga district, Karnataka. | R.N. Adhikari<br>S.K.N. Math<br>S.L. Patil | Bellary | 2008 | 2011 | To be continued<br>**TDET (MoRD)** |
| Comments : Names of Dr. P.K. Mishra, Dr. N. Loganandhan, Mr. B. Mondal and Mr. D. Ramajayam are deleted. Gauging structures may be constructed by March, 2009. Data of impact indicators should be collected during bench mark survey and presented in the next IRC meeting. (Action: Er. R.N. Adhikari) | | | | | | |

### 5.4 FARMING SYSTEM APPROACH

| | | | | | | |
|---|---|---|---|---|---|---|
| 62. | Evaluation of fish based Integrated Farming Systems in foothills and mid-hills of Himalayas. | M. Muruganandam<br>C.Prakash | Hydrology & Engineering, Dehradun | 2009 | 2011 | To be continued<br>**(New Project)** |
| Comments: Production and economic aspects may be studied in the project. Objectives may be modified accordingly (Action: Mr.M.Muruganadam) | | | | | | |
| 63. | Enhancement of livelihood security through sustainable farming systems and related farm enterprises in North-West Himalaya. | B.L. Dhyani<br>Ambrish Kumar<br>D. Mandal | HRD&SS, Dehradun | 2007 | 2011 | To be continued<br>(**NAIP Project**) |
| Comments: Minutes of NAIP meeting regarding recommendations for undertaking civil works and recruitment of SRF/RA may be obtained at the earliest. Survey of project site may be undertaken by hiring suitable diploma holders on contract basis. (Action: Dr. B.L.Dhyani) | | | | | | |
| 64. | Visioning, Policy Analysis and Gender (V-PAGe) | Pradeep Dogra | RCM Unit, Dehradun | 2008 | 2012 | To be continued<br>(**NAIP Project**) |
| Comments:. Pauwala Soda CBT system may also be evaluated. (Action: Dr.Pradeep Dogra) | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 65. | Multiple decision criteria for identifying suitable Integrated Farming Systems in different agro-ecological regions for optimizing resource conservation and productivity. | Pradeep Dogra<br>N.K. Sharma<br>A.C. Rathore<br>M. Muruganandam<br>S. Patra | RCM Unit, Dehradun | 2009 | 2013 | To be continued<br>(**Core Project**)<br>**(New Project)** |
| | | P.K. Panda<br>A.K. Singh<br>Pramod Jha | Agra | | | |
| | | S.L. Patil<br>S.K.N. Math<br>R.N. Adhikari | Bellary | | | |
| | | S.L. Arya<br>Pratap Singh<br>Sharmistha Pal<br>Ram Prasad | Chandigarh | | | |
| | | Dev Narayan<br>P.P. Adhikary<br>N.M. Ramesha | Datia | | | |
| | | P. Jakhar<br>B.S. Naik, D. Barman | Koraput | | | |
| | | Ashok Kumar<br>H.R. Meena<br>B.K. Sethy, S.N. Prasad | Kota | | | |
| | | K. Kannan<br>D.V. Singh, V. Selvi | Udhagamandalam | | | |
| | | V.C. Pandey<br>Gopal Kumar,<br>H.B. Singh | Vasad | | | |
| Comments: Data may be collected of NWDPRA watersheds through bench mark survey covering bio-physical resources availability, production set up (prevalent mono and integrated farming systems), economics of prevalent farming systems and socio-economic setup for establishing of IFS within NWDPRA watersheds. A workshop may be held in middle of March, 2009 at Headquarters for discussing the results drawn from analysis of bench mark data, selection of enterprises as components of new IFS and orienting Research Centres about data to be collected for multi criteria decision making.<br>(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 |
|---|---|---|---|---|---|---|
| 66. | Watershed Technology (Mission Mode). | K.P. Tripathi<br>Bankey Bihari<br>S. Patra | Hydrology & Engineering, Dehradun | 1999 | 2009 | To be concluded |
| 67. | Development of model watershed Iduhatti in the Nilgiris. | M. Madhu<br>D.V. Singh<br>V. Selvi<br>P. Sundarambal<br>R. Ragupathy | Udhagamandalam | 2008 | 2011 | To be continued<br>**(HADP Funded)** |
| Comments: Name of Dr. Siddayya is deleted. For all purposes, data of two watersheds should be presented separately. (Action: Dr. M. Madhu) | | | | | | |

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

### 6.1: RESOURCE ECONOMICS

| | | | | | | |
|---|---|---|---|---|---|---|
| 68. | 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 continued |
| Comments: Names of Mr. B. Mondal, Dr. N. Loganandhan and Dr. P.K. Mishra are deleted and Dr. S.L. Patil will be the leader of project. | | | | | | |

### 6.2 : INSTITUTE VILLAGE LINKAGE PROGRAMME FOR TECHNOLOGY ASSESSMENT AND REFINEMENT

| | | | | | | |
|---|---|---|---|---|---|---|
| 69. | 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<br>Ambrish Kumar<br>Charan Singh<br>Bankey Bihari<br>M. Muruganandam<br>D. Mandal | HRD&SS, Dehradun | 2007 | 2010 | To be continued<br>**TDET (MoRD)** |
| Comments: Name of Mr. D.S. Tomar is deleted. CBT systems should be completed on 5 ha area by June, 2009 for timely sowing of *Kharif* crops. (Action: Dr. B.L. Dhyani) | | | | | | |

### 6.3 : COMMON PROPERTY RESOURCE MANAGEMENT

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 70. | Evaluation of institutional arrangements and impact of community based water storage structures in different agro-climatic zones of India | Pradeep Dogra<br>Bankey Bihari<br>B.L. Dhyani<br>C. Prakash | RCM Unit, Dehradun | 2008 | 2011 | To be continued<br>**(Core Project)** |
| | | R.N. Adhikari | Bellary | | | |
| | | S.L. Arya<br>V.K. Bhatt | Chandigarh | | | |
| | | Om Prakash | Datia | | | |
| | | Ashok Kumar<br>Shakir Ali | Kota | | | |
| | | P. Sundarambal<br>D.C. Sahoo | Udhagamandalam | | | |
| | | V.C. Pande<br>G.L. Bagdi<br>D.R. Sena | Vasad | | | |
| Comments: Names of Mr. B. Mondal, Dr. N. Loganandhan and Er. A.K. Singh are deleted and Er. R.N. Adhikari will be the leader at Bellary Centre. Names of Dr. V.S. Katiyar, Dr. S.V. Singh and Dr. Siddayya are deleted at Research Centres Datia, Kota and Udhagamandalam, respectively. Schedule for collection of data may be sent by the core leader to all scientists associated with the project by March 15, 2009. (Action: Dr. Pradeep Dogra) | | | | | | |

## P-7 HUMAN RESOURCE DEVELOPMENT AND TECHNOLOGY TRANSER

### 7.1 TRAINING METHODOLOGY, NEED ASSESSMENT, GENDER NEUTRALITY AND EVALUATION

| | | | | | | |
|---|---|---|---|---|---|---|
| 71. | Study on capacity building of field functionaries for watershed development and management. | Bankey Bihari | HRD & SS, Dehradun | 2005 | 2009 | To be concluded |
| Comments: Complete recommendations regarding improvement of training programmes (syllabus) of farmers, WDT members etc. should be formulated and presented in the next IRC meeting for implementation. (Action: Dr. Bankey Bihari) | | | | | | |

| S. No. | Title of the Project | Leader and Associates | Centre/Division | Start | Completion | Remarks |
|---|---|---|---|---|---|---|
| 72. | Capacity building programmes for watershed management in India: Assessment and impact analysis. | Bankey Bihari<br>B.L. Dhyani<br>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<br>V.C. Pande | Vasad | | | |
| Comments: Names of Dr. N. Loganandham and Mr. B. Mondal are deleted and Dr. S.K.N. Math will be the leader at Bellary Centre. Names of Dr. S.V. Singh and Dr. Siddayya are deleted at Research Centres Kota and Udhagamandalam, respectivley. Schedule developed may be sent by the core leader to all scientists associated with the project by Jan. 15, 2009. (Action: Dr. Bankey Bihari) | | | | | | |

### 7.3 PARTICIPATORY APPROACHES, DESSEMINATION OF TECHNOLOGY AND ADOPTION

| | | | | | | |
|---|---|---|---|---|---|---|
| 73. | Information and communication technologies for efficient water management: US India collaborative extension / outreach and distance education under AKI. | S.L. Arya<br>A.K. Tiwari<br>Pratap Singh | Chandigarh | 2008 | 2009 | To be concluded (**AKI Project**) |

**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 supported.
- All RPFs i.e. RPF I for new projects approved in IRC-2008, RPF II (2008-09) for on-going projects and RPF III for the projects concluded in 2008 should be submitted by March 31, 2009 positively.

# PROJECTS CONCLUDED IN 2008

| S. No. | Programme No. | S. No. of IRC Meeting Proc. 2007 | Title of the Project | Centre/Division |
|---|---|---|---|---|
| 1. | 2.1 | 10 | Integrated nutrient supply system for rainfed semi-arid tropics. | Bellary |
| Comments: Yield under deficient rainfall and normal rainfall conditions should be separated and analyzed to assess the effect of low, normal and good rainfall on yield. The complete results should be presented in a seminar at the Research Centre and reported in RPF-III. (Action: Dr. S.L. Patil) | | | | |
| 2. | 2.1 | 22 | Crop diversification through agro-forestry for productivity and sustainability on reclaimed land of Mahi ravines. | Vasad |
| 3. | 2.2 | 23 | Evaluation of comparative performance of aonla based agri-horti systems at 2% slope in Doon Valley. | Soil Science & Agronomy, Dehradun |
| Comments: All available data should be analysed. Recommendations should be made using aonla data and presented in the next IRC meeting. (Action: Dr. N.K. Sharma) | | | | |
| 4. | 2.2 | 29 | Economic fortification of existing forest and horti land use system through medicinal and aromatic species. | Agra |
| 5. | 3.1 | 42 | Environmental impact assessment of community based water resources management projects in Uttarakhand. | Hydrology & Engineering, Dehradun |
| 6. | 3.3 | 51 | Effective utilization of waterways for conservation and production. | Hydrology & Engineering, Dehradun |
| Comments: The site may be maintained as a demonstration block by OIC, Research Farm, Selakui. (Action: OIC, Research Farm, Selakui) | | | | |
| 7. | 3.3 | 54 | Effect of interventions on small watershed hydrology. | Datia |
| 8. | 4.1 | 55 | To find specifications for cost-effective design of spurs with regard to their shape, geometry and apron by carrying out laboratory studies (in hydraulic flume) | Hydrology & Engineering, Dehradun |
| 9. | 5.3 | 62 | Ethno biological studies and impact evaluation on Indigenous Technical knowledge (ITK) associated with fishery resources, fish harvesting, fish poisons and community based fishing festivals in mid Himalayas. | Hydrology & Engineering, Dehradun |
| Comments: A status paper may be prepared and conveyed to State Department / Media/Press regarding adverse impact of prevalent social fishing activities. (Action: Mr. M. Muruganandam) | | | | |
| 10. | 6.1 | 68 | Economic analysis of soil and water conservation measures in Nilgiris. | Udhagamandalam |
| Comments: Economic analysis and interpretation of data may be done in consultation with scientist of Agricultural Economics and reported in RPF-III. (Action: Dr. O.P.S.Khola) | | | | |

# NEW PROJECTS APPROVED IN IRC MEETING - 2008

| S. No. | Prog. No. | S.No. of this proc-eedings | Title of the Project | Centre/Division |
|---|---|---|---|---|
| 1. | 1.1 | 2 | Delineation and characterization of Mahi ravines using remote sensing and GIS in terms of resource potential planning. | Vasad |
| 2. | 1.3 | 6 | Modified soil erodibility K factor for the soil in the Bundelkhand region, India. | Datia |
| 3. | 2.1 | 13 | Conservation tillage for resource management and higher production from Shiwaliks. | Chandigarh |
| 4. | 2.1 | 18 | Evaluating the different crop combinations for strip cropping in terms of soil, nutrient losses and their productivity in uplands of Eastern Ghats. | Koraput |
| 5. | 2.1 | 19 | Resource conservation by alley cropping in shifting cultivated degraded lands of Eastern Ghat. | Koraput |
| 6. | 2.2 | 31 | Evaluation of traditional minor millet based agro-forestry systems under recommended agri-silvicultural practices of North-Western Himalayas | Plant Science, Dehradun |
| 7. | 3.2 | 52 | Design and development of site specific artificial groundwater recharge filters. | Vasad |
| 8. | 4.1 | 55 | To study the performance of special types of spurs through laboratory studies (in hydraulic flume) | Hydrology & Engineering, Dehradun |
| 9. | 5.4 | 62 | Evaluation of fish based Integrated Farming System in foothills and mid-hills of Himalayas | Hydrology & Engineering, Dehradun |
| 10. | 5.4 | 65 | Multiple decision criteria for identifying suitable Integrated Farming Systems in different agro-ecological regions for optimizing resource conservation and productivity. | RCM Unit, Dehradun, Agra, Bellary, Chandigarh, Datia, Koraput, Kota, Udhagamandalam, Vasad |

## OBSERVATIONAL TRIAL APPROVED FOR 2009

| S.No. | Title of the project | Leader & Associate | Centre/Division |
|---|---|---|---|
| 1. | Development of scalogram model based on soil parameters, landuse and topographic characteristics for estimation of sediment yield from small watersheds. | Sharmistha Pal<br>V.K. Bhatt<br>A.K. Tiwari | Chandigarh |
| Comments: Weightage of important parameters may be worked out and results may be presented in the next IRC meeting. (Action: Dr. Sharmistha Pal) | | | |

# 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 | 7,8,9, | **03** |
| | • Hydrology & Engineering | 1,3,42,43,44,55,62,66 | **08** |
| | • HRD & SS | 4,26,27,53,63,69,71,72, | **08** |
| | • Plant Science | 10,11,28,29,30,31,45, | **07** |
| | • RCM Unit | 64,65,70 | **03** |
| 2. | Agra | 4,46,50,54,65 | **05** |
| 3. | Bellary | 4,5,32,51,61,65,68,70,72 | **09** |
| 4. | Chandigarh | 3,4,12,13,33,34,47,51,56,65,70,72,73 | **13** |
| 5. | Datia | 4,6,14,15,16,51,65,70,72 | **09** |
| 6. | Koraput | 4,17,18,19,35,51,65 | **07** |
| 7. | Kota | 3,4,20,21,36,37,50,51,57,58,65,70,72 | **13** |
| 8. | Udhagamandalam | 4,22,23,24,25,38,39,40,51,59,65,67,70,72 | **14** |
| 9. | Vasad | 2,3,4,41,48,49,50,51,52,60,65,70,72 | **13** |
| | **Grand Total** | | **112** |

## 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 | - | - | - | - | - | **3** |
| | ♦ Hydrology & Engineering | 2 | - | 3 | 1 | 2 | - | - | **8** |
| | ♦ HRD & SS | 1 | 2 | 1 | - | 1 | 1 | 2 | **8** |
| | ♦ Plant Science | - | 6 | 1 | - | - | - | - | **7** |
| | ♦ RCM Unit | - | - | - | - | 2 | 1 | - | **3** |
| 2. | Agra | 1 | - | 3 | - | 1 | - | - | **5** |
| 3. | Bellary | 2 | 1 | 1 | - | 2 | 2 | 1 | **9** |
| 4. | Chandigarh | 2 | 4 | 2 | 1 | 1 | 1 | 2 | **13** |
| 5. | Datia | 2 | 3 | 1 | - | 1 | 1 | 1 | **9** |
| 6. | Koraput | 1 | 4 | 1 | - | 1 | - | - | **7** |
| 7. | Kota | 2 | 4 | 2 | 2 | 1 | 1 | 1 | **13** |
| 8. | Udhagamandalam | 1 | 7 | 1 | 1 | 2 | 1 | 1 | **14** |
| 9. | Vasad | 3 | 1 | 5 | 1 | 1 | 1 | 1 | **13** |
| | **Grand Total** | **17** | **35** | **21** | **6** | **15** | **9** | **9** | **112** |

# 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 2008 is as follows:

| S. No. | Name | Designation | Leader | Associate | Total | S. No. of projects to be concluded |
|---|---|---|---|---|---|---|
| 1. | Dr. V.N. Sharda | Director | 2 (3,42) | - | 2 | 3 |
| **Soil Science and Agronomy Division** | | | | | | |
| 2. | Dr. K.S. Dadhwal | Head of Division | 1 (8) | 1 (10) | 2 | - |
| 3. | Dr. N.K. Sharma | Pr. Scientist (Agro.) | 1 (9) | 7 (4,7,8,26,42,53, 65) | 8 | 53 |
| 4. | Dr. B.N. Ghosh | Sr. Scientist (Soils) | 1 (7) | 4 (11,28,30,45) | 5 | - |
| 5. | Mr. M. Shankar | Scientist (Soils) | - | 1 (26) | 1 | - |
| **Hydrology and Engineering Division** | | | | | | |
| 6. | Dr. G.P. Juyal | Head of Division | 1 (55) | - | 1 | - |
| 7. | Er. K.P. Tripathi | Pr. Scientist (Engg.) | 3 (43,44,66) | - | 3 | 43,66 |
| 8. | Dr. P.R. Ojasvi | Pr. Scientist (Engg.) | - | 1 (3) | 1 | 3 |
| 9. | Er. S.S. Shrimali | Sr. Scientist (Com.App.) | 1 (1) | - | 1 | 1 |
| 10. | Mr. M. Muruganandam | Scientist (SS) (Fisheries) | 1 (62) | 2 (65,69) | 3 | - |
| 11. | Er. S. Patra | Scientist (Engg.) | - | 8 (3,4,8,43,44,55, 65,66) | 8 | 3,43,66 |
| **Human Resource Development and Social Science Division** | | | | | | |
| 12. | Dr. B.L. Dhyani | Head of Division | 2 (63,69) | 3 (53,70,72) | 5 | 53 |
| 13. | Dr. Charan Singh | Sr. Scientist (Forestry) | 2 (26,27) | 3 (28,45,69) | 5 | 27 |
| 14. | Dr. Bankey Bihari | Sr. Scientist (Ag. Extn.) | 2 (71,72) | 3 (66,69,70) | 5 | 66,71 |
| 15. | Dr. Ambrish Kumar | Sr. Scientist (Engg.) | 1 (53) | 5 (3,9,45,63,69) | 6 | 3,53 |
| 16. | Dr. D. Mandal | Sr. Scientist (Soils) | 1 (4) | 5 (9,29,31,63, 69) | 6 | - |

**(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** | | | | | | |
| 17. | Dr. A. Raizada | I/c Head of Division | 2 (28,45) | 2 (27,42) | 4 | 27 |
| 18. | Dr. Harsh Mehta | Pr. Scientist (Pl. Breed.) | 2 (10,31) | - | 2 | - |
| 19. | Dr. A.C. Rathore | Scientist (SS) (Hort.) | 2 (11,30) | 1 (65) | 3 | - |
| 20. | Dr. J. Jayaprakash | Scientist (Forestry) | 1 (29) | - | 1 | - |
| 21. | Dr. J.M.S. Tomar | Scientist (Forestry) | - | 1 (31) | 1 | - |
| **Research Coordination & Management Unit** | | | | | | |
| 22. | Er. C. Prakash | Pr. Scientist (Engg.) | -- | 3 (42,62,70) | 3 | - |
| 23. | Dr. Pradeep Dogra | Sr. Scientist (Ag. Eco.) | 3 (64,65, 70) | 4 (4,7,26,72) | 7 | - |
| **Research Centre, Agra** | | | | | | |
| 24. | Dr. S.K. Dubey | Head of Centre | - | 2 (4,50) | 2 | - |
| 25. | Dr. P.K. Panda | Sr. Scientist (Agro.) | 1 (65) | - | 1 | - |
| 26. | Er. A.K. Singh | Scientist (SG) (Engg.) | - | 3 (4,50,65) | 3 | - |
| 27. | Mr. R.K. Dubey | Scientist (SS) (Agro.) | - | 1 (4) | 1 | - |
| 28. | Er S.K. Srivastava | Scientist (Engg.) | 1 (54) | - | 1 | 54 |
| 29. | Dr. K.P. Mohapatra | Scientist (Forestry) | 1 (50) | 1 (46) | 2 | 46 |
| 30. | Dr. Pramod Jha | Scientist (Soils) | 2 (4,46) | 2 (54,65) | 4 | 46,54 |
| **Research Centre, Bellary** | | | | | | |
| 31. | Dr. S.K.N. Math | I/c Head of Centre | 3 (4,32,72) | 4 (5,51,61,65) | 7 | 5,51 |
| 32. | Er. R.N. Adhikari | Pr. Scientist (Engg.) | 4 (5,51,61, 70) | 3 (4,32,65) | 7 | 5,51 |
| 33. | Dr. S.L. Patil | Sr. Scientist (Agro.) | 2 (65,68) | 2 (4,61) | 4 | - |
| **Research Centre, Chandigarh** | | | | | | |
| 34. | Dr. A.K. Tiwari | Head of Centre | 1 (3) | 5 (4,47,51,56, 73) | 6 | 3,51,56, 73 |
| 35. | Dr.(Ms.) Pawan Sharma | Pr. Scientist (Soil Micro-bio) | 1 (12) | 4 (13,33,47,56) | 5 | 33,56 |
| 36. | Dr. Pratap Singh | Pr. Scientist (Agro.) | 1 (33) | 6 (4,12,13,34, 65,73) | 7 | 33,73 |
| 37. | Dr. R.P. Yadav | Pr. Scientist (Soils) | 3 (4,13,56) | 2 (34,51) | 5 | 51,56 |
| 38. | Dr. (Ms.) S.L. Arya | Pr. Scientist (Ag. Eco.) | 4 (65,70, 72, 73) | 2 (12,34) | 6 | 73 |
| 39. | Dr. V.K. Bhatt | Sr. Scientist (Engg.) | 2 (47,51) | 4 (3,33,56,70) | 6 | 3,33,51, 56 |
| 40. | Dr. Ram Prasad | Sr. Scientist (Hort.) | 1 (34) | 3 (12,56,65) | 4 | 56 |
| 41. | Dr.(Ms.)Sharmistha Pal | Scientist (Soils) | - | 1 (65) | 1 | - |
| **Research Centre Datia** | | | | | | |
| 42. | Dr. S.P. Tiwari | Head of Centre | - | - | Nil | - |
| 43. | Dr. Dev Narayan | Sr. Scientist (Agro.) | 3(15,16,65) | 2 (4,14) | 5 | 14 |
| 44. | Dr. Om Prakash | Sr. Scientist (Ag. Extn.) | 2 (70,72) | - | 2 | - |
| 45. | Dr. H. Biswas | Scientist (Soils) | 3 (4,14,51) | 2 (15,16) | 5 | 14,51 |
| 46. | Dr. P.P. Adhikary | Scientist (Soils) | 1 (6) | 1 (65) | 2 | - |
| 47. | Dr. N.M. Ramesha | Scientsit (Forestry) | - | 1 (65) | 1 | - |

**(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** | | | | | | |
| 48. | Dr. K.P. Gore | Head of Centre | - | 2 (18,19) | 2 | - |
| 49. | Er. B.S. Naik | Scientist (Engg.) | 2 (35,51) | 4 (4,17,18,65) | 6 | 51 |
| 50. | Mr. H. Gowda | Scientist (Forestry) | 1 (19) | 1 (35) | 2 | - |
| 51. | Mr. P. Jakhar | Scientist (Agro.) | 3 (17,18, 65) | 3 (4,19,35) | 6 | - |
| 52. | Dr. D. Barman | Scientist (Soils) | 1 (4) | 3 (18,19,65) | 4 | - |
| **Research Centre, Kota** | | | | | | |
| 53. | Dr. S.N. Prasad | Head of Centre | 1 (21) | 3 (4,20,65) | 4 | 20 |
| 54. | Dr. R.K. Singh | Pr. Scientist (Soil Fer.) | 2 (4,20) | 6 (21,36,37,51, 57,58) | 8 | 20,51 |
| 55. | Dr. A.K. Parandiyal | Sr. Scientist (Forestry) | 3 (37,50,58) | 2 (36,57) | 5 | - |
| 56. | Dr. Ashok Kumar | Sr. Scientist (Ag. Eco.) | 3 (65,70, 72) | 5 (20,21,36,37, 57) | 8 | 20 |
| 57. | Er. Shakir Ali | Scientist (SS) (Engg.) | 2 (3,51) | 4 (21,50,57,70) | 6 | 3,51 |
| 58. | Er. B.K. Sethy | Scientist (Engg.) | 1 (57) | 4 (4,51,58,65) | 5 | 51 |
| 59. | Mr. H.R. Meena | Scientist (Hort.) | 1 (36) | 2 (58,65) | 3 | - |
| **Research Centre, Udhagamandalam** | | | | | | |
| 60. | Dr. O.P.S. Khola | Head of Centre | 2 (23,25) | - | 2 | - |
| 61. | Dr. M. Madhu | Sr. Scientist (Agro.) | 2 (24,67) | 3 (22,38,39) | 5 | 22,38 |
| 62. | Dr. D.V. Singh | Sr. Scientist (Soil Fer.) | 4 (4,22,40, 59) | 5 (23,38,51,65, 67) | 9 | 22,38,51, 59 |
| 63. | Dr.(Ms.) P.Sundarambal | Sr. Scientist (Ag. Extn.) | 2 (70,72) | 1 (67) | 3 | - |
| 64. | Dr. K. Kannan | Sr. Scientist (Agro.) | 1 (65) | 2 (4,25) | 3 | - |
| 65. | Mr. R. Ragupathy | Scientist (SS) (Forestry) | 1 (38) | 1 (67) | 2 | 38 |
| 66. | Er. (Ms.) V. Selvi | Scientist (SS) (Engg.) | 1(51) | 6 (4,22,23,59,65, 67) | 7 | 22,51,59 |
| 67. | Er. D.C. Sahoo | Scientist (Engg.) | 1 (39) | 3 (40,59,70) | 4 | 59 |
| **Research Centre, Vasad** | | | | | | |
| 68. | Dr. R.S. Kurothe | Head of the Centre | 2 (3,48) | 3 (4,49,51) | 5 | 3,49,51 |
| 69. | Dr. H.B. Singh | Pr. Scientist (Agro.) | 1 (41) | 5 (2,4,44,48,65) | 6 | - |
| 70. | Dr. M.L. Gaur | Sr. Scientist (Engg.) | 2 (50,60) | 1(41) | 3 | 60 |
| 71. | Dr. G.L. Bagdi | Sr. Scientist (Ag. Extn.) | 1 (72) | 1 (70) | 2 | - |
| 72. | Mr. V.C. Pande | Scientist (SG) (Ag.Eco.) | 2 (65,70) | 6 (2,41,48,50, 51,72) | 8 | 51 |
| 73. | Dr. D.R. Sena | Scientist (SS) (Engg.) | 2 (49,51) | 6 (2,3,44,48,52, 70) | 8 | 3,49,51 |
| 74. | Dr. Gopal Kumar | Scientist (Soil) | 3 (2,4,52) | 5 (41,44,48,50, 65) | 8 | - |

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

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