

**ICAR-Indian Agricultural Statistics Research Institute**  
**Library Avenue, PUSA, New Delhi-110012**

**Proceedings of the first Workshop of Nodal Officers of ICAR Research Data Repository for Knowledge Management initiative organized at NASC Complex, New Delhi during August 04-05, 2015 to sensitize the nodal officers about the ICAR Research Data Repository for Knowledge Management and to discuss the future course of action for implementation of ICAR Research Data Management Policy.**

The detailed programme of the Workshop is given in the Annexure-I. The workshop was inaugurated by Dr. S. Ayyappan, Secretary DARE and Director General, ICAR. The workshop was attended by ICAR Officials, Steering Committee Members, Directors from Delhi based Institutes, Nodal Officers for Research Data Management from 95 Institutes and the Implementation team members. The list of organizations from which the Nodal officers could not participate in the meeting is given in Annexure-II. After detailed presentations and discussions, following actionable points emerged.

**A. Data Management**

1. For the Research Data Management Guidelines, ICAR Research Data Management Policy approved by the Governing Body on March 12, 2014 and published and circulated in October 2014 as part of ICAR Guidelines for Internal Evaluation and Forwarding Research Papers to Scientific Journals and Data Management in ICAR Institutes should be followed. The guidelines on (i) Definition of Data, (ii) Data Ownership; (iii) Data Collection and Recording; (iv) Data Storage and Security; (v) Data Access and Sharing; (vi) Data Retention, etc. may be followed as per above publication.
2. A strong message should go that data generated in ICAR institutes as well as using ICAR funds belong to the Council and it must be available with the Institutional Repositories/Central Repositories. As far as possible, all data generated to be geo-referenced.
3. PME cell should also maintain proper indexing of data about type, location, extent of availability and the source of data. The nominated Nodal Officer for Research Data Management in ICAR Institutes (normally PME Cell Incharge along with AKMU Incharge) would be responsible for coordinating with the project team and implement the data management policies at the Institute level. The project team would formulate appropriate guidelines for the nodal officers to carry out their tasks.
4. In the first phase, all efforts and major emphasis should be made to sensitize the researchers about the importance of digitization of research data. The reporting/analysis, etc. may be taken up in the next phases. Nodal Officers are requested to sensitize the researchers regarding this aspect. A Seminar may be delivered by the Nodal Officers in their respective Institutes within a month.
5. Meta data may be prepared for bringing data in Institutional Repositories, etc. Digital copy of all publications to be available with Institutes.
6. The Institutes should develop and maintain Institute level repositories and the funds made available under the Head Information Technology may be utilized for the purpose.
7. In “No Dues Certificate proforma” on superannuation or transfer of scientists/technical officers, information regarding the data available with the person and to whom it has been handed over (next PI/Nodal Officer/PME Cell) should be included.
8. Immediate efforts should be made to provide links of all digitized databases /knowledge repositories available on ICAR Institute website or other Government Agencies on

KRISHI Portal so as to facilitate access to all knowledge repositories available within ICAR from one single platform.

9. It is mandatory to provide links of online resources (databases, information systems, e-advisory etc.) available in ICAR Institutions/ZPDs on KRISHI Portal. This would be helpful in showcasing the ICT initiatives of ICAR institutes through KRISHI. Nodal Officers should provide the URLs along with brief details about the initiatives in this regard taken by respective Institute from time to time. Useful links from other Government Departments are also included.
10. The website and online documents/resources available online must be updated regularly by all the Institutes. Nodal officers should prepare a list of Databases/Information systems available with the Institutes. All efforts should be made to keep these resources updated.
11. Data register/notebooks should be made mandatory for the researchers. Observations has to be recorded daily. Data on every experiment should to be recorded in Institutional repositories whether it fails or not as it has involved scientific efforts and resources to conduct the respective experiments. The information may be kept in database, excel file, Document, pdf or any other format. It can be made available to Institute's website as well as central repository.
12. **Policy Framework of Different Levels of Authentication of Users and Sharing/Access of Data:** (i) The data entry option may be given to individual scientist. Nodal Officer/PME Cell/ Director of the respective Institutes would be responsible for timeliness and quality of data entered and approval of data. Once the Director of the Institute approves the data, it goes to Portal and simultaneously a notification is issued to SMD Nodal Officer; (ii) The Institutes may be asked to classify the data based on sensitivity and their value. Institutes may also classify the data for open access, registered access, restricted access, sharing within ICAR, with other government agencies, paid access, etc. Data sets may also be classified into high value and low value categories. Some data sets may also be identified for sharing on National Data Sharing and Accessibility Portal and (iii) Institutes may be asked to decide the sharing access/cooling period of data as per guidelines of data management policy wherein different cooling periods have been proposed based on the types of data such as meteorological data, land-use pattern etc. may be shared immediately, raw experimental data after 3-4 years and means/analyzed may be allowed after one year. However, the original source of data must be invariably acknowledged by anyone who has used the data. The data must be retained by PME cell and the period of retention should be decided by PME cell in consultation with the PI/Co-PI.
13. The list of on-going and completed projects available in PIMS-ICAR is being made available in Open Access in the form of dynamic reports. The report should also contain the date of start (for ongoing projects); date of start and completion (for completed projects); name of PI/Co-PIs. The dynamic report should also contain the executive summary of the completed projects, wherever feasible. The Nodal Officers of PIMS-ICAR may be requested to make the corrections in the project lists, wherever required. A letter may be sent by the PIMS-ICAR team to all its Nodal Officers. The data quality would be the responsibility of concerned Nodal Officers.
14. Bureaux should continue with their Resources Data Repositories within their existing budget.
15. Reports to be generated from different repositories need to be finalized by different SMDs.

## **B. ICAR Geo-portal**

16. In order to depict the geographical spread of Institutional Resources, the latitude-longitude of the Institute (including regional stations) in DD° MM' SS" format e.g. Latitude: 28°61'23.5"N ; Longitude: 78°12'09.2"E are required. All nodal officers are requested to send the same at the earliest, if not submitted earlier. Location (latitude-longitude) of KVKs should also be shared.
17. All the ICAR institutes should contribute in uploading and submitting their respective spatial data on the geo-portal to enrich it so that the data being generated can be used to the best use. Presently, whatever spatial data is present with the institutes, they should start uploading it. The data being generated should have precise geo-location.
18. Datasets submitted to ICAR Geo-portal must be geo-referenced.
19. Every spatial datasets must be associated with the Metadata details. Metadata is most important and, therefore, it should be generated with utmost care and meticulously as per format available on KRISHI Portal.
20. Provision should be made for directly uploading the original data in shape files, images or raster format on the geo-portal. In case the data uploading has some issues, a link to a dropbox may be provided.
21. For the map layers made available on ICAR Geo-portal, wherever feasible name of the maps, reference of the contributing organization, detailed meta data, methodology and data table may also be displayed for the benefit of users. Wherever feasible, provision of depiction/overlying more than one attributes may be given.
22. Where the spatial data/GIS Maps is available in paper format, it should be digitized and then uploaded on geo-portal.
23. It has been decided that the institutes having spatial databases should submit the same to ICAR Geo-portal. Some of the institutes along with thematic areas identified are: Fisheries: CIFT, Kochi; Animal Disease Surveillance: NIVEDI, Bangalore;; Animal Genetic Resources Mapping - NBAGR, Karnal;; Mapping coldwater resources - DCFR, Bhimtal; Complete mapping of water bodies and water quality for Cold water Fisheries - CIFRI, Barrackpore;; Mapping of weed occurrence/intensity- Directorate of Weed Research, Jabalpur, Pest Monitoring – NCIPM, New Delhi.; Salt affected soils- CSSRI, Karnal; Wind erosion maps - CAZRI; Climatic database -CRIDA; Cropping systems maps/data -PDFSR. The nodal officers of the concerned institute are asked to interact with the scientists from NBSS&LUP, Nagpur and IARI, New Delhi for bringing their data to ICAR Geo-portal ( keeping in view the scale of mapping and harmonization) for guidance and help.

## **C. Publication Repository**

24. Presentations were made on KRISHIKOSH (developed under NAIP, having some data for few Institutes) and EPRINTS (developed and maintained by CMFRI, Kochi). Both of these systems may be explored before arriving at a decision for developing publication repository. Possibility of shifting KRISHIKOSH to ICAR Data Centre may also be explored.
25. While uploading the soft copy of technical reports/project reports and other publications care should be taken that it does not violate any principle of plagiarism.

## **D. Experimental Data/Observational Data Repository**

26. The unit level and experimental data can only edit by concern scientists/PIs. But in some repository the enter/edit permission may be given to Nodal Officers/PME Cell in-charge and Directors.

27. As decided earlier in review meetings, in the first phase of Unit level data repository, following 10 AICRPs/Institutions may be taken up:

- **Engineering:** AICRP on Farm Implements and Machinery; AICRP on Post Harvest Technology
- **Animal Sciences:** AICRP on Poultry; AICRP on FMD
- **Natural Resources Management:** AICRP on Long Term Fertilizer Experiments; AICRP on Water Management; AICRP on Weeds.
- **Horticulture:** AICRP on Fruits
- **Fisheries Sciences:** Central Institute of Fisheries Technology, Cochin
- **Crop Sciences:** All India Coordinated Sorghum Improvement Project

Subsequently, the same may be scaled up to cover all AICRPs as well as research Institutes. Till that the experimental data may be kept in Institutional Repositories. Efforts may be made to collect historical data in these Institutional repositories. Till the Central Data Repository comes in place, the Agricultural Field Experiments Information System developed by ICAR-IASRI, New Delhi may be used for experimental data repositories.

#### **E. General Recommendations/Recommendations for KRISHI Implementation Team**

28. Meta data standards may be developed for use in all information systems and databases. Workflows for different data repositories may also be prepared. A comprehensive exercise may be taken up to develop these standards across disciplines, under the guidance of a task force for different SMDs. For developing standards for unit level data, the suggestions on points 2.5.4 and 2.5.5 of Chapter II of ICAR Guidelines for Internal Evaluation and Forwarding Research Papers to Scientific Journals and Data Management in ICAR Institutes may be sent by all Institutes.
29. Master tables of common information in all repositories of KRISHI such as name of the Institutes and their regional centres, Institutions type, SMDs, District, States/UTs, Zones, etc. may be taken up in the beginning.
30. Efforts may be made to provide single window access to all researchers/research managers of the Council.
31. The KRISHI Portal pages may be made more user friendly. A search facility may be added on this Portal. A discussion board may be developed for discussion among the Nodal officers and project team.
32. All presentations made during the workshop should be made available on the Website of the KRISHI Portal.
33. It was observed that most of the institutes are using Hindi fonts for developing website and other web applications as their own convenience. It was concluded that Unicode may be used for developing the online resources. For this DKMA was asked to issue the directive for using the Unicode.
34. ICAR Data Centre guidelines for hosting databases/information systems from other ICAR Institutes may be prepared and circulated to all ICAR Institutes.
35. At present, different email and video conferencing private services are being used by ICAR personnel. Now ICAR has established the ICAR-Datacentre at IASRI with unified message communication facility and provided the secure environment. It was asked to use this facility for secure communications.
36. It was decided that a KRISHI group would be created for KRISHI nodal officers and asked to join a KRISHI group for virtual meeting to discuss the issues and sharing their view to enrich the KRISHI portal.

Actions on all recommendations 1 to 28 are to be taken by all ICAR Institutes and the recommendations from 29-36 are mainly for KRISHI Implementation team.



<b>1600-1730</b>	<b>Technical Session III : ICAR Geo-Portal</b> Chairman : Dr. BS Prakash Co-Chairman : Dr. SK Singh Dr. Rapporteur : Dr. Adlul Islam and Dr. Anshu Bhardwaj	
1600-1615	Development of Geo-spatial Database and Metadata for KRISHI Geoportal	Dr. GP Obi Reddy
1615-1630	ICAR Geo-Portal	Dr. Vinay Sehgal
1620-1730	Data Formats and Geo-reference data availability	All Participants
<b>August 05, 2015 (Wednesday)</b>		
<b>0930-1115</b>	<b>Technical Session IV : Unit Level Data Repository</b> Chairman : Dr. VK Gupta Co-Chairman : Dr. SK Chaudhari Rapporteur : Dr. Arpan Bhowmik and Sh. Raju Kumar	
0930-0945	AICSIP Automation System and AICRP on Vegetable Crops	Dr. Dhandapani
0945-0950	Experimenters View Point on AICSIP Automation System	Dr. Sujay Rakshit
0950-1005	Information System on Designed Experiments including Long Term Fertilizer Experiments and On Farm experiments	Dr. Seema Jaggi/ Dr. Susheel Sarkar
1005-1020	Observational Data Repository	Dr. N.S. Raju
1020-1115	<ul style="list-style-type: none"> <li>• Discussion on broad outlines of unit level data for developing standard format as per point 2.5.4 of Data management policy</li> <li>• Discussion of Unit Level Data on 10 Selected AICRPs/Institutes and format for Unit level data/ Presentation by participants</li> </ul>	All Participants - Dr. Mallikarjun B. Hanji - Dr. P. Krishnamoorthy - Dr. Santosh J. Eaper
1115-1130	Tea	
<b>1130-1300</b>	<b>Technical Session V : Workflows and IT Infrastructure</b> Chairman : Dr. Alok Sikka Co-Chairman : Dr. SK Chaudhari Dr. G. Venkateswarlu Rapporteur : Dr. Mukesh Kumar and Ms. Vandita Kumari Choudhary	
1130-1150	Unified Communication System	Dr. AK Choubey/ Dr. Alka Arora
1150-1210	Workflows for Central Data Repository and Single Sign on through Unified Communication System	Dr. AK Choubey / Dr. Mukesh Kumar
1210-1245	Discussion	All Participants
1245-1345	Lunch	
1345-1430	<b>Valedictory/Plenary Session</b> Chairman : Dr. Alok Sikka Co-Chairman : Dr. SK Chaudhari Dr. G. Venkateswarlu Panelists : Dr. U.C.Sud, Dr. Rajender Parsad, Dr. A.K. Choubey, Dr. A. Dhandapani, Dr. G. Obi Reddy, Dr. Vinay Sehgal	

**List of Organizations from which Nodal Officers could not Participate in the Workshop**

1. ICAR- Indian Institute of Wheat and Barley Research, Karnal
2. ICAR-Project Directorate on Foot & Mouth Disease, Mukteshwar
3. ICAR-Indian Grassland and Fodder Research Institute, Jhansi
4. ICAR-ICAR Research Complex for NEH Region, Barapani
5. ICAR-Directorate of Medicinal and Aromatic Plants Research, Anand
6. Zonal Project Directorate, ZONE IV, Kanpur , Uttar Pradesh
7. ICAR-Directorate of Rice Research, Hyderabad
8. ICAR-National Bureau of Agriculturally Important Micro-organisms, Mau, Uttar Pradesh
9. ICAR-Central Tuber Crops Research Institute, Trivandrum
10. ICAR-Directorate of Rapeseed & Mustard Research, Bharatpur
11. Zonal Project Directorate, ZONE II, Kolkata, West Bengal
12. ICAR-Sugarcane Breeding Institute, Coimbatore