PROCEEDINGS OF THIRD NATIONAL WORKSHOP OF OFFICER INCHARGE, DATA MANAGEMENT
December 04-05, 2018

Third National Workshop of Officer Incharge, Data Management was held during December 04-05, 2018 at NASC Complex, New Delhi. The purpose of this workshop was to review the progress made and discuss the way forward for implementation of ICAR Research Data Repository for Knowledge Management. The detailed programme of the Workshop is given in the Annexure-I. The workshop was attended by ICAR Officials, Steering Committee Members, Directors from Delhi based Institutes, Nodal Officers/ Officer Incharge, Data Management for Research Data Repository from 86 Institutes and the Implementation team members. The list of institutions, which are not represented in the meeting is given in Annexure-II. During the workshop, the following applications were formally released: (i) Technology Repository by Secretary DARE and DG, ICAR; (ii) Information System for AICRP on FIM by Deputy Director General (Agricultural Engineering), ICAR and (iii) Video/Audio Gallery by Deputy Director General (Agricultural Education), ICAR.

Appreciation certificates were also given to the Institutes who have certified uploading of all publications and/or technologies for last five years or who have uploaded more than 700 publications and/or 200 data sets. List of such Institutions are given in the ANNEXURE-III.

Inaugural Session
The workshop was inaugurated by Dr. Trilochan Mohapatra, Secretary DARE and Director General, ICAR. Dr. Mohapatra appreciated the progress made so far and congratulated the KRISHI team for their good work. He emphasized that framework development for research data repository be completed on priority. Dr. Mohapatra desired that the Information Systems for all AICRPs may be completed by March 2020. For this purpose all Project Coordinators should come forward and provide required information for developing and implementing them. He also mentioned that for speedy implementation, at least 20 more scientists (who are knowledgeable in research data management) from IASRI and other institutes may be roped in. He also stressed the need to have proper world class infrastructure including security features for Data Management. He also urged to upload and share each and every research data generated, on the Krishi Portal for the effective and efficient use by the researchers and scholars.

Dr. Narendra Singh Rathore, Deputy Director General (Agricultural Education) shared his expert views regarding the sharing of research data with the people involved in the field along with adopting the trans-disciplinary approach for the safety of the data from being misused at any stage. He emphasized on 3-S i.e. safety, security and surveillance of the data.

Dr. K. Alagusundaram, Deputy Director General (Agricultural Engineering) emphasized that research data generated in ICAR system is a public property and should be shared. He also highlighted that the workshop will provide hands-on-training on various frameworks of data management and sharing.

Dr. S.K. Chaudhari, Additional Director General (National Resource Management) appreciated the efforts made by the team, narrated the challenges being faced and said the Krishi Portal will become more robust in near future.

After detailed presentations and discussions during the Technical sessions, following actionable points emerged.

Data Management, Administrative and Financial Issues

1. More rigorous efforts should be made to ensure that the data generated from research, educational and other activities must be available with the Institutional Repositories/Central Repositories. As far as possible, all data generated to be geo-referenced.

(Action: All Institutes)

2. Implement the Council's office order F.N. GAC-21-4/2016-CDN dated May 10, 2016 regarding "No Dues Proforma" to be issued on superannuation or transfer of scientists/technical officers that should include the information regarding the data available with the person and to whom it has been handed over (next PI/Nodal Officer/PME Cell).

(Action: All Institutes)

3. Data on every experiment should be submitted to Institutional repositories/Central repositories including the experiments which have failed in database as excel file, Document, pdf or any other format.

(Action: All Institutes)

4. Institutes may classify the data as open access (available to all); registered /restricted access (require registration); paid access; shared within ICAR and/or other; Government agencies, high value and low value categories, etc.

(Action: All Institutes)

5. Sensitisation programmes / training programmes on importance of Research Data management may be conducted in all regions.

(Action: KRISHI Team)

6. Appropriate funds may be allocated for capacity building of team members at International level particularly on data standards, interoperability and ontology based data management.

(action: Steering Committee and KRISHI Team)

7. As per office order F.No. 13/55/2018-Cdn. Tech. dated September 07, 2018, for smooth and fast implementation of Data Management Guidelines within the Institutes, the Institutes may hire contractual staff from the funds available in Operational Head of their respective EFC/SFCs as per requirement and workload.

(Action: All Institutes)

Technology Repository and IPR Guidelines

A draft comprehensive document on research Data management was circulated covering various existing documents on data, IPR, professional service functions, open data etc.

8. All Institutes should give their suggestions on draft comprehensive document on research data management by March 15, 2019.

(Action: All Institutes)

9. It was clarified that the Data is not copyrightable but expression of data can be copyrighted. Decision support systems are possible only when all data is entered in central repository. While getting anything free for testing from private or the foreign agencies, one should make sure that the agreement includes the clause that the commercial value will be shareable.

(Action: All Institutes)

10. In joint MOUs /projects terms and conditions, a section of data management /rights (including all details about who shall keep the data, etc.) may be added. Directions may be issued to the Institutes by ADG (IPTM & PME) and a copy should be kept in ICAR Research Data Repository. It is also required to bring more clarity on (i) data access and storage for Joint IP projects/consultancy (ii) Merging and Linking these guidelines (iii) Applicability of the guidelines in case of any confusion or disputes.

(Action: ADG(IPTM) & All Institutes)

11. Past data can be used for data driven research including development of products based on artificial Intelligence for Next Generation Precision agriculture. Necessary care must be

undertaken before providing open access of data for all as it may lead to third parties getting profit from commercial exploitation. Open access may be restricted to only annual report, synthesized project report, research papers, technical brochures, etc. Unit level data access may be restricted to only ICAR &/NARES. It was also suggested that the practice of submitting genome/genotype data, etc. in common repositories elsewhere (NCBI/EMBL etc) may be reviewed as sooner or later, they may close the open access and the Council may have to pay for its own data. So it is high time that appropriate data management system is in place for ICAR particularly for genomics and bioinformatics data.

(Action: All Institutes)

12. Partner Centre ICAR-DKMA, New Delhi in coordination with lead centre ICAR-IASRI, New Delhi and ADG(IPTM & PME) should make the Patent Online Database functional within next two months time.

(Action: ICAR-DKMA, New Delhi)

13. All proven technologies/methodologies may be uploaded in Technology Repository. All Institutes should certify that all proven technologies/methodologies have been uploaded latest by March 31, 2019. A new module of prototypes/technologies in pipeline may also be thought of.

(Action: All Institutes)

14. A new Information System for Varieties may be developed.

(Action: KRISHI Team)

15. It was decided that a repository of breeding lines may be developed under KRISHI portal. This repository should contain information on advanced breeding lines, mutated material, inter- and intra-generic cross material, transgenic material, low HCN lines, doubled haploids, haploids, trisomics, etc. along with pedigree and specific trait information. Data will be uploaded by authorized persons at Institute level as per the lines approved by the Institute committee. Access to this should be restricted and guidelines need to be formulated for sharing till the line is registered with PPVFRA. Guidelines in this regard may be prepared by IPTM section of the Council.

(ADG(IPTM) and KRISHI Team)

Online Resources, Video/Audio Gallery, Mobile links

16. It is mandatory to provide links of online resources (databases, information systems, e-advisory, etc.) available in ICAR Institutions/ATARIs on KRISHI Portal. This would be helpful in showcasing the ICT initiatives of ICAR institutes through a single Portal. Officer Incharge Data Management should continue providing the URLs along with brief details about the initiatives in this regard taken by respective Institutes from time to time.

(Action: All Institutes)

17. 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.

(Action: All Institutes)

18. A link of KRISHI Portal https://krishi.icar.gov.in may be provided at each Institute website.

(Action: All Institutes)

19. A common account for each institute may be created for Mobile Apps accounts on Google play store and Social Media Accounts. All Apps, social media reports should use this common account and not individual accounts. The details of such account may be communicated so that same can be provided the application 'Find Institutes' on KRISHI Portal.

(Action: All Institutes)

20. All links of Videos/Audios available with the Institutes should be converted into compatible formats and uploaded on Video/Audio gallery at KRISHI Portal. Links of videos of ICAR Scientists speaking in KRISHI channel may be uploaded in KRISHI Portal. Each Institute should certify that all video/ audio links available with the Institutes have been provided on KRISHI

Portal latest by February 28, 2019. If Video/Audio files are uploaded in ICAR Publication and Data Inventory Repository, due care should be taken that there are no copyright violations and these are available in latest formats.

(Action: All Institutes)

21. Each Institute should make efforts in developing comprehensive Mobile Apps based on themes rather than having separate mobile apps on individual topics.

(Action: All Institutes)

Unit Level Data Repository

22. Efforts should be made to develop the Information Systems and websites for all AICRPs by March 2020. Customisation of analysis and reporting module should be done in consultation with the coordinating centers. All AICRPs and Network Projects should have unit-level data with complete layout with Coordinating Unit. Each AICRP should develop and maintain standard experimental protocols, good research practices, standard operating procedures and a copy may be kept at central place.

(Action: All AICRPs and KRISHI Team)

23. Project Co-ordinators for the AICRPs for which Information Systems have already been developed (such as AICRPs on Farm Implements and Machinery), Post Harvest Engineering and Technology, Vegetable Crops) should implement at the earliest. For implementation of different automation system and unit level repositories, proper phase wise training (e.g. training for coordinator, center incharge, etc.) should be arranged to help the end users on how to operate these systems.

(Action: Concerned AICRPs)

24. Standardized formats (parameters required as organization attributes and weather parameters along with units and definitions) for uploading of data by ICAR Institutes and AICRP on AM centres for Manual Surface Observatories may be finalized and the web application should be so designed that it has web service for replication of data. This should ensure that the data get uploaded simultaneously at ICAR Data Centre (KRISHI Observational Repository) and ICAR CRIDA Server.

(Action: ICAR-CRIDA, Hyderabad and KRISHI Team)

25. All Institutes should follow ICAR Quality Research Data Acquisition Guidelines available at Download link on KRISHI Portal.

(Action: All Institutes)

26. Application on Master Code Tables may be prepared so that they can be used across different e-initiatives of ICAR

(Action: ICAR-CRIDA, Hyderabad and KRISHI Team)

Data Management Guidelines

27. Nodal Officers/Officer Incharge, Data Management should sensitise the researchers in their respective Institutes' for Open data policy of Government of India/ICAR, Government Open Data License/ICAR Data License and ICAR Quality Research Data Acquisition Guidelines. These guidelines should be used for transparency, accountability, policy making, planning, and enhancing the relationship between ICAR and stakeholders.

(Action: All Officer Incharge, Data Management)

28. All the Officer Incharge, Data Management were asked to identify and share datasets with KRISHI team which can be used for further research work. Action Plan should be created for automated regular release/update of datasets through web services.

(Action: All Nodal Officers & KRISHI Team)

29. Efforts should be made to integrate the Acronym & Synonym dictionary in KRISHI Portal which can help to search by Organization name such as IASRI, NRCPB, IARI, etc.

(Action: KRISHI Team)

30. PME Cell of the Institutes should ensure to follow the Guidelines for Research Data Management in ICAR by all the researchers to collect, recording storage, retention and security of data which was approved in March 12, 2014. It was published and circulated in October 2014 among all the scientists.

(PME Cell Incharges/KRISHI Nodal Officers)

31. A large number of data set are available on Open Government Data Platform India (OGD-https://data.gov.in). It was felt that there is need to integrate between KRISHI Portal and OGD platform. In this regard, a meeting may be organized with the team responsible for development of OGD platform to harvest and sync open data available in two platforms.

(Action: KRISHI Team & NIC Officials)

32. Positive datasets should be identified for sharing on Open Data Platform. Action Plan need to be developed for automated regular release of datasets through web services. Published catalogues and resources (Datasets/Apps) should be in Open Format (CSV, XML, XLS, RSS, etc.)

(Action: All Institutes)

ICAR Geo-Portal

33. Maps of the varieties available of a particular crop in a particular area (at AEZ level, State, District level, etc.) should be developed and made available. This can be done using the data of varieties and areas where they are currently grown in the country. This can be taken up after the variety information system is developed and populated.

(Action: All Institutes, KRISHI Team)

34. To strengthen the ICAR Geoportal, the already developed suitability maps of various crops should be uploaded on it and then simultaneously, the basic data should also be procured so that more maps can be generated using them on different themes.

(Action: Concerned Institutes, KRISHI Team)

35. If basic data or maps cannot be shared on geoportal, then the metadata of those maps/spatial datasets MUST be shared and uploaded on KRISHI portal. Information about data available on Geoportal can therefore, be taken from this.

(Action: All Institutes)

36. Institutes already working in GIS/ Geospatial Data should share their data, use the data available on Geoportal and add value to it and also develop applications using the data.

(Action: All Institutes)

37. The identified Institutes for Spatial datasets as per details below
    – ICAR-NBSS&LUP, Nagpur: The spatial data sets on (i) Soil Database (1:250 K), (ii) Acid Soils and (iii) Desert Soils. Bhoomi Portal has been developed as a consequence of sensitisation efforts of ICAR Research Data Management Guidelines. Information available on this should be provided on ICAR Geo-Portal in synchronized mode.
    – ICAR-IIWM, Bhubaneswar: Water Resource maps (Surface and Groundwater):
    – ICAR-CMFRI, Kochi: Marine Fish Resources
    – ICAR-IISS, Bhopal: (i) Fertility Maps (Macro Nutrients); (ii) GIS & GPS Based Soil Fertility Maps For Precise Fertilizer Recommendations For The Farmers of The Country; (iii) Soil Fertility Maps (Micronutrients): Nutrient Index based Maps and (iv) Micronutrient deficiencies in different states.
    – ICAR-IIFSR, Modipuram: Cropping Systems maps
    – ICAR-DCFR, Bhimtal: Cold Water resources maps
    – ICAR-NBAGR, Karnal: Animal Genetic Resources maps: Received attribute files containing breeding tracts of various breed of animal species. District mapping due change in number of districts is awaited

- ICAR-NCIPM, New Delhi: Pest Monitoring maps
- ICAR-CIFRI, Barrackpore: Water Bodies & Water Quality for Fisheries maps
- ICAR-CSWRI, Avikanagar; ICAR-NRC on Mithun; ICAR-NRC on Camel; ICAR-NRC on Yak: Migratory tracks on animal flocks
- AICRP on FIM and AICRP on PHT: Spatial layers pertaining to farm mechanization, post-harvest losses

<div align="right">(Action: Concerned Institutes and KRISHI Team)</div>

38. A mechanism may be developed to Sync data from Bhoomi Portal; CREAMS on ICAR Geo-Portal and other databases/information systems being developed by different Institutes with similar Repositories on KRISHI.

<div align="right">(KRISHI Team Partners IARI and NBSSLUP)</div>

ICAR Institutional Publication and Data Inventory

39. Publications of last 5 years should be uploaded in ICAR Institutional Publication and Data Inventory Repository on priority. Past publications should also be uploaded, wherever available. While uploading the publications, please do upload the soft copy of the publication (if the copyright has not been transferred to the third party) and/or URL/DOI of the publication where it is available. If the copyright is transferred to the third party, then please do give the URL/DOI of the publication. To ensure the implementation, it is suggested that a column in APAR proforma may be given in this regard.

<div align="right">(Action: All Institutes)</div>

40. Office order F.No. 13/55/2018-Cdn. Tech. dated September 07, 2018, regarding uploading of publications/technologies should be followed in letter and spirit. All publications being reported in Annual Report(s)/News Letter(s) should be given along with Uniform Resource Identifier (URI) generated from ICAR Publication and Data Inventory Repository.

<div align="right">(Action: All Institutes)</div>

41. Data Inventory Repository aims at creating Metadata Inventory through information related to data availability at Institute level. The meta data details/data uploading may be taken up from ongoing/recently completed projects followed by past projects. This would in turn help in unit level data repositories.

<div align="right">(Action: All Institutes)</div>

42. Efforts should be made for developing solutions for Sync/exporting the data in different Open Access Publication Repositories for ICAR Institutes.

<div align="right">(Action: KRISHI Team partners CMFRI and CRIDA)</div>

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Third National Workshop of Officer Incharge, Data Management
(ICAR Research Data Repository for Knowledge Management)
KRISHI: http://krishi.icar.gov.in

December 04-05, 2018

December 04, 2018(Tuesday): AP Shinde Symposium Hall, NASC Complex, New Delhi	
0830-0900	**Registration**
0900-1020	**Inaugural Function**
	ICAR Song
0900-0905	Welcome Address	Dr. L.M. Bhar
0905-0920	Presentation on KRISHI Portal	Dr. Rajender Parsad
0920-0925	Remarks	Dr. S.K. Chaudhari
0925-0935	Remarks	Dr. N.S. Rathore
0935-0945	About ICAR Research Data Repository for Knowledge Management Initiative	Dr. K. Alagusundaram
0945-1015	Inaugural Address	Dr. Trilochan Mohapatra
1015-1020	Vote of Thanks	Dr. A. Dhandapani
1020-1045	Tea	
1045-1145	**Technical Session I** : **Technology Repository and IPR Guidelines** Chairman : Dr. S.K. Chaudhari Rapporteur : Dr. Partha Biswas and Dr. Susheel Sarkar	
1045-1115	ICAR IPR Guidelines	Dr. Sanjeev Saxena
1115-1135	ICAR Technology Repository	Dr. Rajender Parsad/ Dr. Mukesh Kumar
1135-1145	Discussion on Technology Repository and IPR Guidelines and Action Plan	All Participants
1145-1300	**Technical Session II** : **Data Management Guidelines** Chairman : Dr. Sanjeev Saxena Rapporteur : Dr. Mukesh Kumar and Dr. Sukanta Dash	
1145-1215	Open Data Platform - Government of India	Dr. Alka Mishra
1215-1245	ICAR Research Data Management Guidelines	Dr. Rajender Parsad
1245-1300	Discussion on Data Management Guidelines	All Participants
1300-1400	**Lunch**	
1400-1515	**Technical Session III** : **ICAR Geo-Portal** Chairman : Dr. S.K. Singh (NBSS&LUP) Rapporteur : Dr. Anshu Bharadwaj and Dr. Joydeep Mukherjee	
1400-1420	AP Geo-Platform and its Applications to Agriculture and Land Use	Dr. K.V. Ramana
1420-1440	Development of Geo-spatial Database and Metadata for KRISHI Geo-portal	Dr. G.P. Obi Reddy
1440-1500	ICAR Geo-Portal along with Applications for Location Specific Recommendations	Dr. Vinay Kumar Sehgal
1500-1510	Geo-Application of PGR Climate Change	Dr. Sunil Archak
1510-1520	Data Formats and Geo-reference Data Availability	All Participants

1520-1615	**Technical Session IV** : **Publication Repository, Data Inventory and Inter-portal Harvester** Chairman : Dr. L.M. Bhar Co-Chair Dr. Seema jaggi Rapporteur : Dr. Amrender Kumar and Dr. Anil Kumar	
1520-1550	Publication Repository, Data Inventory and Inter-portal Harvester – Introduction and Demonstration	Dr. Rajender Parsad
1550-1615	Discussion on Publication Repository and Action Plan	All Participants
1620-1635	**Tea**	
1635-1800	**Technical Session V** : **Unit Level Data Repository** Chairman : Dr. Dr. T. Jankiram Rapporteur : Dr. Arpan Bhowmik and Dr. N.S. Raju	
1635-1650	Experiential Learning: Automation System for AICRP on Maize and Sorghum	Dr. Sujay Rakshit
1650-1710	AICRP Automation System	Dr. A. Dhandapani
1710-1725	AICRP on FIM	Dr. C.R. Mehta
1725-1740	E-Pest Surveillance: Challenges in Data Management	Dr. S. Vennila
1740-1800	Discussion of Unit Level Data on Selected AICRPs/ Institutes and format for Unit level data/ Presentation by participants	All Participants
1800-1845	**Technical Session VI** : **Valedictory/Plenary Session** Chairman : Dr. K. Alagusundaram Co-Chairman : Dr. S.K. Chaudhari Rapporteur : Dr. A. Dhandapani, Dr. Vinay Sehgal and Dr. G.P. Obi Reddy	
1800-1830	Implementation Issues – General Discussion	All Participants
1830-1845	Recommendations and Action Points finalization	
December 05, 2018 (Wednesday): ICAR-IASRI, New Delhi		
1000-1530	**Hands on Training on** - Institutional Publication Repository - Data Inventory Repository - Technology Repository - Video/Audio Gallery/ICAR Mobile Apps - ICAR Geo-Portal and Spatial Meta Data	KRISHI Team

Officer Incharge, Data Management/Representatives from Following Institutes could not participate in Third National Workshop of Officer Incharge, Data Management held during December 04-05, 2018

1. ICAR-Indian Veterinary Research Institute, Izatnagar
2. ICAR-Central Avian Research Institute, Izatnagar
3. ICAR-Central Institute of Cotton Research, Nagpur
4. ICAR-Central Sheep and Wool Research Institute, Avikanagar, Rajasthan
5. ICAR-ICAR Research Complex for Eastern Region, Patna
6. ICAR- Central Coastal Agricultural Research Institute, Goa
7. ICAR-Indian Institute of Soil Sciences, Bhopal
8. ICAR-Indian Institute of Spices Research, Calicut
9. ICAR-Indian Institute of Vegetable Research, Varanasi
10. ICAR-National Institute of Biotic Stresses Management, Raipur
11. ICAR-National Institute of High Security Animal Diseases, Bhopal
12. ICAR-Indian Institute of Rice Research, Hyderabad
13. ICAR-National Research Centre on Orchids, Pakyong, Sikkim
14. ICAR-National Research Centre on Seed Spices, Ajmer
15. ICAR-National Research Centre on Yak, West Kemang
16. ICAR-Directorate of Rapeseed & Mustard Research, Bharatpur
17. ICAR-Directorate on Onion and Garlic Research, Pune
18. ICAR-Directorate of Floricultural Research, Pune, Maharashtra
19. ICAR-Directorate of Knowledge Management in Agriculture (DKMA), New Delhi
20. ICAR-Directorate of Cold Water Fisheries Research, Bhimtal, Nainital
21. Agricultural Technology Application Research Institute, Kolkata
22. Agricultural Technology Application Research Institute, Jabalpur

The List of Institutes to whom appreciation certificates were given for uploading of all Publications and/or Technologies for last five years or who have uploaded more than 700 publications and/or 200 data sets.

S.No.	Name of the Institute	Publication /Technology/Data Sets
1.	ICAR-Indian Institute of Horticultural Research, Bengaluru	Technology for last 5 years
2.	ICAR-National Institute of High Security Animal Diseases, Bhopal	Publications for last 5 years
3.	ICAR-National Institute of Veterinary Epidemiology and Disease Informatics, Bengaluru	Publications for last 5 years
4.	ICAR-Indian Institute of Millets Research, Hyderabad	Publications for last 5 years
5.	ICAR-Agricultural Technology Application Research Institute Zone X, Hyderabad	Publications for last 5 years
6.	ICAR-National Research Centre on Meat, Hyderabad	Publication and Technologies for last 5 years
7.	ICAR-National Research Centre for Integrated Pest Management, New Delhi	Technology for last 5 years
8.	ICAR-Central Institute for Arid Horticulture, Bikaner	Publications for last 5 years
9.	ICAR-Indian Institute of Soybean Research, Indore	Publication and Technologies for last 5 years
10.	ICAR-National Institute of Animal Nutrition and Physiology, Bengaluru	Publications for last 5 years
11.	ICAR-Central Institute of Brackishwater Aquaculture, Chennai	For uploading of more than 700 publications with files.

The following three Institutes have also completed upload, though their filled in proforma were received after the due date. Efforts made by them are also highly appreciated.

12.	ICAR-ATARI, Kanpur	Technology for last 5 years
13.	ICAR-NRC for Banana, Tiruchirapalli	Publications for last 5 years
14.	ICAR-Central Plantation Crops Research Institute, Kasargod	Technology for last 5 years