ANNUAL REPORT

2020-2021

ICAR-National Agricultural Higher Education Project

(IG) Sub project on

National Knowledge Management Centre
For Agricultural Education & Research

ICAR - NATIONAL AGRICULTURAL HIGHER EDUCATION PROJECT (IG)
SUB PROJECT ON NATIONAL KNOWLEDGE MANAGEMENT CENTRE FOR AGRICULTURAL EDUCATION & RESEARCH

ANNUAL REPORT 2020-2021

Lead Centre

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TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY, CHENNAI, T.N
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EXECUTIVE SUMMARY

NAHEP is designed to strengthen the national agricultural education system in India with overall objective to provide more relevant and high quality education to agricultural university students. This project will promote efficiency and competiveness through changes in working mechanism of agricultural universities, raising the teaching and research standards through improved research and teaching infrastructure and enhanced faculty competency and commitments, and making agricultural education more attractive to talented students. There are four key components under NAHEP, namely; Institutional Development Plan (IDP), Centers for Advanced Agricultural Sciences and Technology (CAAST), ICAR to support excellence in Agricultural Universities (AUs), and ICAR Innovation Grants (IG) to Agricultural Universities AUs. It is envisaged that improved AU performance through quality enhancement, better employment and entrepreneurship opportunities created for agriculture graduates, non-accredited AUs attaining ICAR accreditation, and institutional reforms implemented in education division of ICAR and AUs under these components together shall contribute to the achievement of the overall project objective.

INTRODUCTION

In India, National Agricultural Research & Education System (NARES) has a huge repository of knowledge and information on Crop Sciences, Horticulture, Resource Management, Animal Sciences, Agricultural Engineering, Fisheries, Agricultural Extension and Agricultural Education. Digital technologies, Easy online access to information resources have enabled increased usage of library and information services by the students, library professionals, faculty and research scholars.

For researchers, timely and quick access to the existing scientific data and archived scholarly information on his/her area of interest is crucial for acquiring knowledge on latest trends in their respective domains. The services rendered by the Library & Information Science professionals have gained prominence and have undergone drastic fundamental changes over the past few decades. Digital resources, Digital services and Access technologies have created new opportunities, new challenges and new expectations. Union catalogue, Digital Repository and Digital libraries are the new paradigms initiated under e-Granth have facilitated researchers, teachers, students, extension professionals to acquire knowledge in many agricultural universities. These existing facilities needed to be extended

in a more efficient and effective manner. With this objective, the ICAR-NAHEP has sanctioned a project entitled "National Knowledge Management Centre for Agriculture Education and Research to PJTSAU, IARI, TANUVAS and IVRI.

LEAD CENTRE:

Professor Jayashankar Telangana State Agricultural University, Hyderabad, Telangana

PJTSAU was established in the year 2014 by an act of legislature, named in honour and memory of Professor Kothapalli Jayashankar, an eminent educationist and an ardent Telangana ideologue is the only Farm University of Telangana State. PJTSAU envisions itself as a Centre of Excellence, a one stop destination for agricultural innovation encompassing Education, Research and Extension among all its faculties. The vision of the University is to cater to the needs of an enterprising farming community of Telangana, which is endowed with abundant natural resources, diverse soil and agro-climatic conditions suitable for varied cropping systems and has the potential to become the 'Seed Bowl of India'.

COORDINATING CENTRES:

1. **ICAR-Indian Agricultural Research Institute, New Delhi**

   The journey of Indian Agricultural Research Institute (IARI), popularly known as Pusa Institute, began in 1905 at Pusa (Bihar) with the generous grant of 30,000 pounds from an American philanthropist, Mr. Henry Phipps. The institute was then known as Agricultural Research Institute (ARI) which functioned with five departments, namely Agriculture, Cattle Breeding, Chemistry, Economic Botany and Mycology. Bacteriology unit was added in 1907. The name of ARI was changed to Imperial Institute of Agricultural Research in 1911 and, in 1919 it was renamed as Imperial Agricultural Research Institute. Following a devastating earth quake on 15th January 1934, the institute was shifted to Delhi on 29th July 1936. Post independence, the institute has been renamed as Indian Agricultural Research Institute (IARI).

2. **Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu**

   Realizing the importance of education research in animal and fisheries sciences so as to increase its productivity towards better income generation for the resource poor farmers, the government of Tamil nadu established the first veterinary and animal sciences university in Asia on 20th September 1989 with its head quarters at Chennai with the name Tamil nadu Veterinary and Animal Sciences University (popularly

abbreviated as TANUVAS). The mandates of the University are to impart education, to ensure advancement of learning and prosecution of research and to undertake extension to rural people in cooperation with the government departments in different branches of veterinary and animal sciences.

3. **ICAR-Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh**

Established in 1889, the Indian Veterinary Research Institute (IVRI) is one of the premier research institutions dedicated to livestock research and development of the region. The institute has a major mandate of research, teaching, consultancy and technology transfer activities. The institute with its long scientific heritage has always enjoyed a certain prestige, a tradition all of its own. The institute imparts quality post-graduate education to students not only from various parts of the country, but also from overseas. Today, the institute contributes immensely to human resource development in the discipline of veterinary sciences with skills and knowledge necessary for the challenges of the new millennium.

OBJECTIVES

- To act as a Digital Scholarship Centre to specialize on new technologies and tools such as data acquisition, visualization, digital asset management, digital preservation, training and consultations as a part of the suite of services and resources.
- To Automate Agricultural University Libraries using Koha ILMS to facilitate sharing of digital library resources with a unified 'Online Union Catalogue'.
- To strengthen the Krishikosh platform - a digital repository for dissemination of agricultural knowledge generated under NARES to the users.
- To sensitize the stakeholders through capacity building programmes / workshops knowledge management in the networked digital environment and introduce new knowledge delivery models like MOOCs.
- To work on Altmetrics which are complementary metrics to traditional and citation- based metrics and sensitize the stakeholders through capacity building workshops.

OUTCOME

- Strengthening of Digital Scholarship Centre and integrate with IARI KrishiKosh Repository. (Mirror Server).
- Procurement of items at all project implementation centres as per the World Bank guidelines (STEP).
- Upgrading of Koha ILMS versions.
- Data migration from existing LMS to Koha ILMS.
- Optimum uploading of documents into Krishikosh through Batch uploading.
- Organization of Capacity Building Programmes for SAUs Librarians including on Altmetrics; Sensitization programmes for research scholars and faculty of AUs which are not covered so far.
- Organization of National Conference of Agricultural Librarians to share experiences.
- To organize national Level Training Programmes on "Implementation of KOHA and User Friendly Interface OPAC"- 01 Nos.
- To organize Sensitization workshop on Agriculture Knowledge Management in the Networked digital Environment- 02 Nos.

ACTION PLAN

S.No.	Objective	Activity	Numbers/ Quantity	No. of beneficiary	
				Students	Faculty
1.	To act as a Digital Scholarship Centre to specialize on new technologies and tools such as data acquisition, visualization, and digital asset management, digital preservation, training and consultations as a part of the suite of services and resources.	• Establishing & strengthening full-fledged digital scholarship centre at all consortium partner libraries. • Procurement of equipments as per the sanction order • Training of stakeholders in digital scholarship (all SAUs including DUs and CUs) (PJTSAU, IARI, TANUVAS and IVRI)		All students and Scholars of NARS Students & Research Scholars -	Faculty of all NARS and LIS Professionals

2.	To Automate AU libraries using Koha ILMS to facilitate sharing of digital library resources with a unified 'Online Union Catalogue'.	• Implementation of Koha – ILMS in all NARES libraries. - (PJTSAU, IARI, TANUVAS and IVRI) • Developing Central Platform for providing cloud like service to NARES libraries to enable them to use Koha for their library operations and local user services. (ICAR-IARI) • Integration of all NARES libraries through KOHA Platform (ICAR-IARI) • Implementation of RFID platform for target libraries (PJTSAU, IARI, TANUVAS and IVRI) • Bibliographic Data Collection, data entry, conversion of existing data from local software to Uniform format (KOHA). PJTSAU, IARI, TANUVAS and IVRI • Union catalog of all NARES libraries searchable through Web to find our collection on a local group and global level – ICAR-IARI. and PJTSAU	Based on requirement of SAUs and its constituent colleges.	All students and Scholars of NARS Students & Research Scholars -	Faculty of all NARS and LIS Professionals
3.	To strengthen the Krishikosh platform - a digital repository for dissemination of agricultural knowledge generated under NARES.	Strengthening this digital repository by customized dashboard for individual community, Retrieval Features which includes the document content and meta data Search, Collaboration Features (document water marking feature, Capability of linking documents with other documents in the system), enhance the maximum user handling capability. Key-phrase Extraction based on Graph-based Approach, Particle swarm optimization, Natural language processing etc., An Unsupervised Statistical Approach of Keyword and Salient Sentence Extraction for Individual Documents Development of web based		Students of all SAUs	Faculty of all SAUs/ ICAR Institutes

		system for similarity check in documents based on Graph based approach, Statistical approach, Annotation and labelling of digital objects for private and broader distribution, Google analytical for monitoring digital repository performance, development of algorithm for duplication of works, tools for batch uploading of documents in digital platform (ICAR - IARI) • Technology foresight tools for identification of future technology (ICAR-IARI and PJTSAU)			
4.	To sensitize the stakeholders through capacity building programmes / workshops knowledge management in the networked digital environment and introduce new knowledge delivery models like MOOCs.	Sensitization of digital repository and Library Management System PJTSAU IARI TANUVAS IVRI	3 Nos. 3 Nos. 5 Nos. 4 Nos.	Students & Research Scholars Students & Research Scholars – 500 Nos. Students & Scholars- 800 Nos. Students & Research Scholars – 600 Nos.	Faculty 150 & LIS Professionals Faculty-200 & LIS Professionals
		Capacity Building or strengthening in ICAR Institutes and SAUs in Library Management so that they can understand, adopt and manage any latest technology in the field of library management, related services and knowledge management technology through various Trainings/Workshops/National Workshops	5 days-1; 2 days-1 2 days – 1 2 days-1	25 & 50 LIS Professionals 50 LIS Professionals 20 LIS Professionals	

		PJTSAU (5 days-1; 2 days-1) IARI TANUVAS IVRI	2 days-1	30 LIS Professionals	
		Developments of online discussion group, webinar, email communications etc. PJTSAU and ICAR-IARI			
		Massive Open Online Courses (MOOCs) on LIS (PJTSAU) Organization of capacity building programmes/workshop on MOOCs PJTSAU, IARI, TANUVAS and IVRI	1	Students, Scholars, faculty and scientists – 1000 Nos.	150 Nos. LIS Professionals
5.	To work on Altmetrics which are complementary metrics to traditional and citation-based metrics and sensitize the stakeholders through capacity building workshop	Sensitization and training of stakeholders in Altmetrics. Scientometric profile in domain of veterinary and crop sciences in Indian and compare with developed countries (ICAR-IARI and TANUVAS) TANUVAS PJTSAU IARI IVRI		Students & Scholars 800 Students & Scholars 500 Students & Scholars 500 Students & Research Scholars –600	Faculty 200 & LIS Professionals Faculty 150 & LIS Professionals Faculty 150 & LIS Professionals Faculty 150 & LIS Professionals

ACTIVITIES IN 2020-2021

Objective 1: ***To act as a Digital Scholarship Centre to specialize on new technologies and tools such as data acquisition, visualization, and digital asset management, digital preservation, training and consultations as a part of the suite of services and resources.***

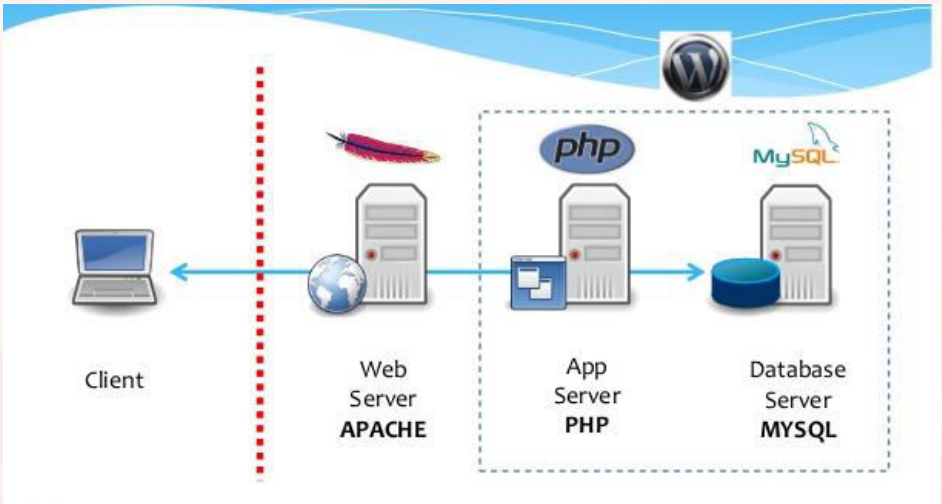
NKMCAER website is developed using Wordpress. WordPress is a free and open-source content management system based on PHP & MySQL. Features include a plugin architecture and a template system.

The Components of WordPress

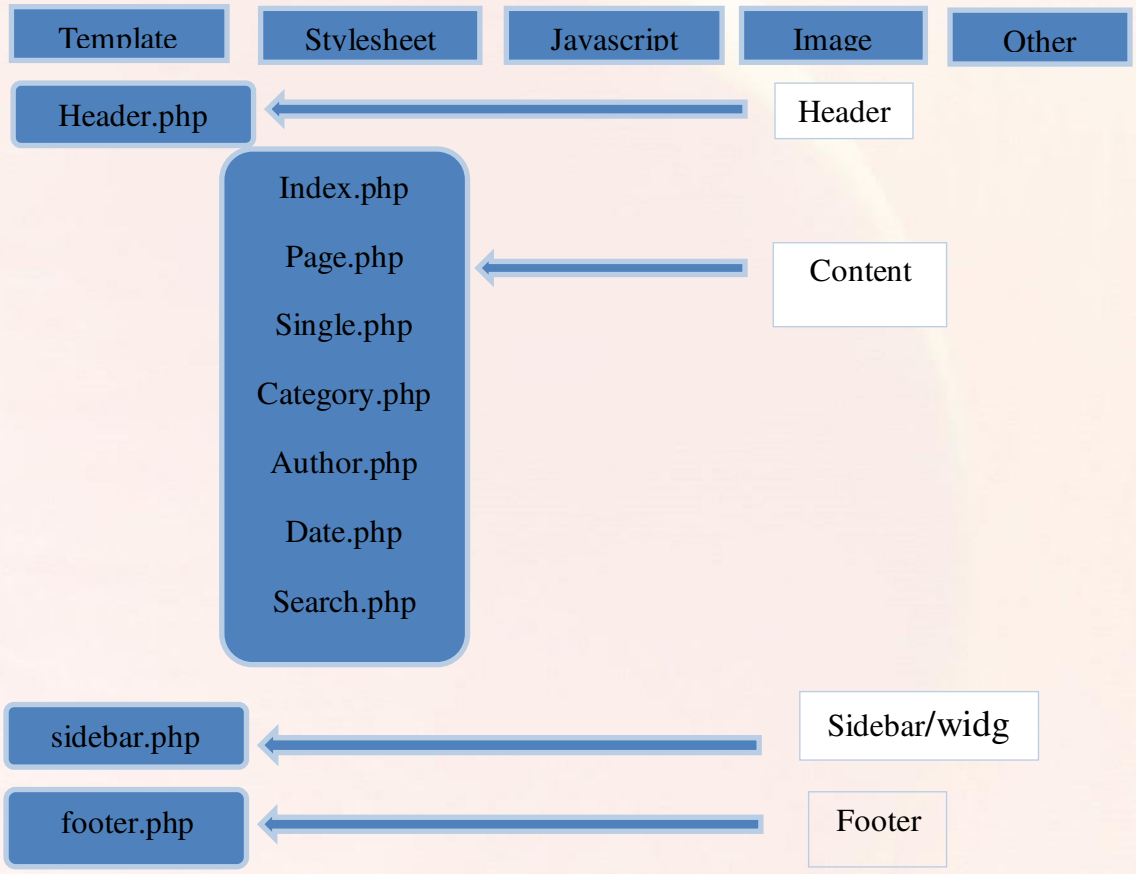
As a web application itself, WordPress is a perfect example of how various technologies come together to form a web application:

- The Database Layer is a MySQL database.
- The Application Layer - which some would consider WordPress itself - is written in PHP and handles a lot of the core operations for reading and writing to the data store all the while providing APIs for developers to take further advantage of it.
- The Presentation Layer uses basic CSS (at least for now), HTML (with some themes now using HTML5), jQuery, and with parts of the dashboard using Backbone.js.

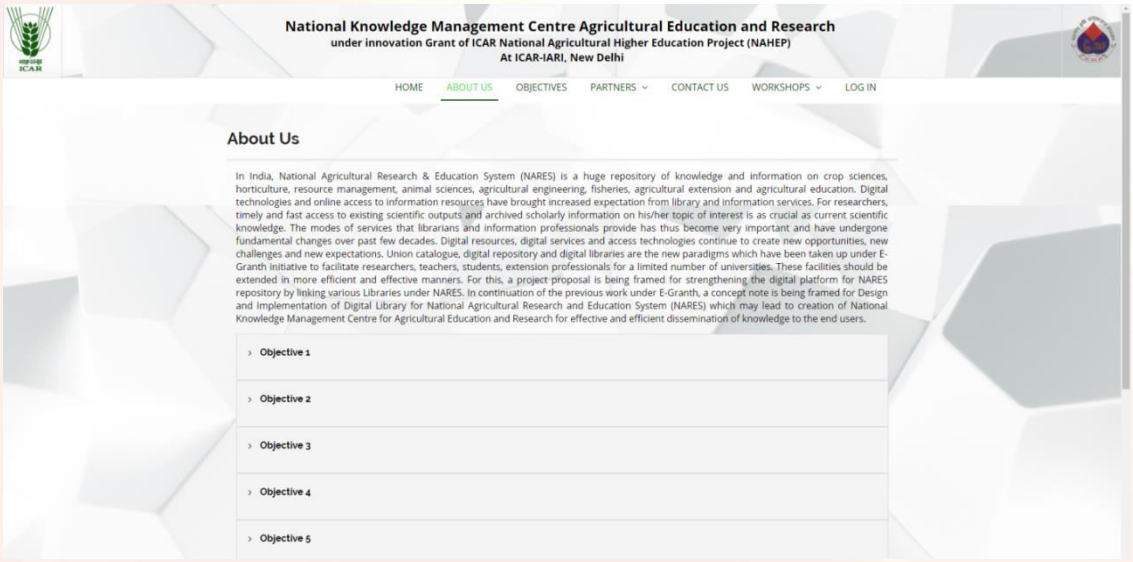
Wordpress 4.9 has been implemented for this website, the Architecture of wordpress is given below, that includes mysql server as database server and PHP as Application server. To run the website apache has been used as a web server. This work as, content is created and stored in database. User clicks on pages, wordpress application reteieves content from databases, CSS used to style page & Page is built “on the fly” by PHP resulting in HTML & JavaScript. Page is displayed to user’s Browser.



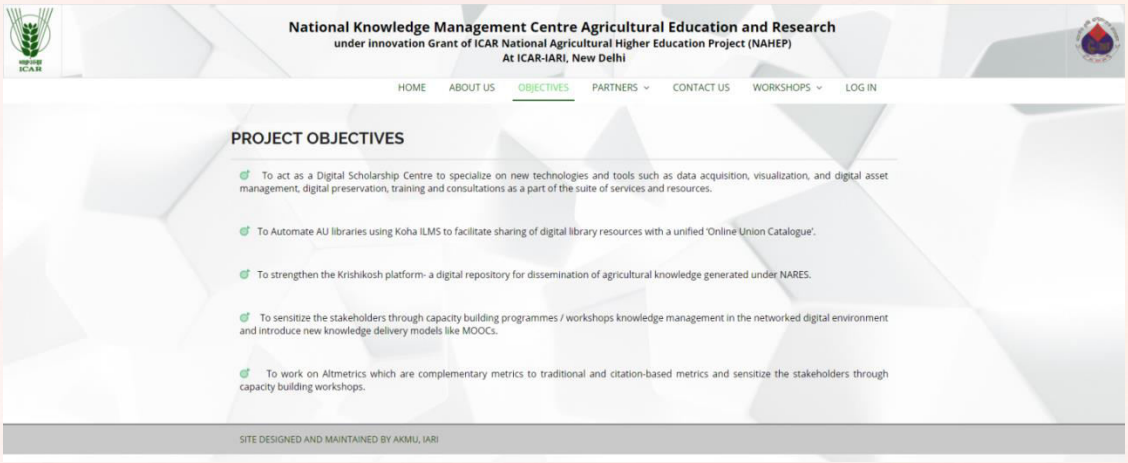
Every wordpress installation comes with a default theme. We can either use this theme or use a custom theme. A wordpress theme is made up of : template files, style sheets files, JavaScript Files, Image files and some other files like functions.php. All these files work together to create the design and functionality of the site. Wordpress internal functionality is explaned in the following architecture.



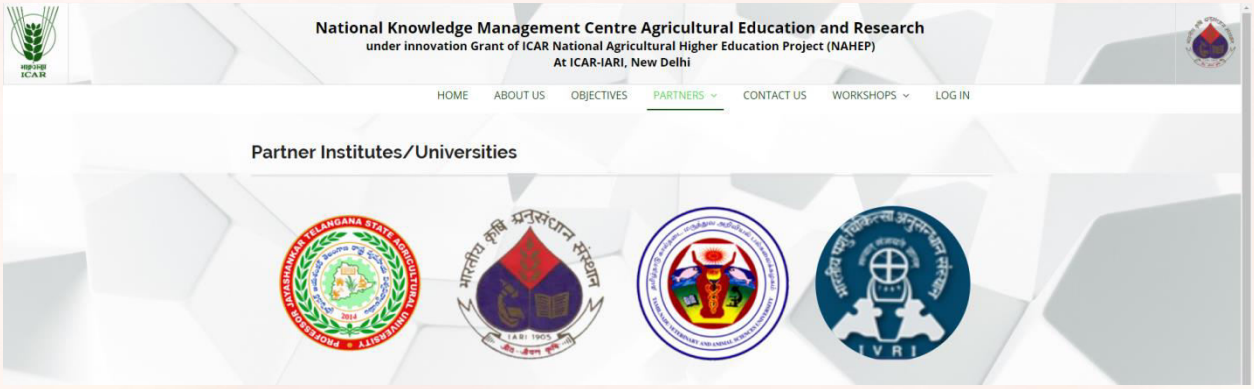
Home Page of the NKMC4AER site (http://nahep.ig.iari.res.in/nkmc4aer/)



Objectives



Partners



Procurement and Installation of SAN:

One of the important objectives of the project is to act as a Digital Scholarship Centre to specialize on new technologies and tools such as data acquisition, visualization, digital asset management, digital preservation, training and consultations as a part of the suite of services and resources. To achieve the same it is proposed to strengthen the Digital Scholarship Centre and integrate with IARI KrishiKosh Repository (Mirror Server). In this context the DRM servers (Mirror Server) are procured, installed and maintained by the lead centre, PJTSAU, Hyderabad. To maintain DRM severs located PJTSAU in an effective way, a Storage Area Network (SAN) - a high-speed network that gives fast access to storage has been procured and installed at PJTSAU Hyderabad. Further the same is now ready to be integrated with Krishikosh server.

DRM Server with SAN Located at PJTSAU, Hyderabad

Objective 2: ***To Automate AU libraries using Koha ILMS to facilitate sharing of digital library resources with a unified 'Online Union Catalogue'.***

A baseline survey was conducted during the year 2020-2021 regarding Koha implementation in Agricultural Universities (AUs) under NARS. To this extent, a total of 56 AUs has been responded to the survey, based on the responses, 28 AU libraries are fully automated (26 with Koha alone /1 using Koha with other software/1 using unspecified software). 24 AU libraries are partially automated (17 with Koha/3 with Koha with others/1 with other software/ 1 didn't specify). Partially automated (meaning one or more constituent college libraries are yet to be automated). 4. AU libraries and its constituent college libraries are not automated at all.

➢ **23** AUs requested support (**1** no automation/**17** partially automated/ **5** automated)
➢ **30** AUs do not want support (**1** no automation/**5** partially automated/**24** automated)
➢ **2** AUs didn't specify (**1** no automation/**1** partially automated)
➢ **1** AU said that they need financial support

Implementation of Koha ILMS at 31 constituent college libraries of 12 Agricultural Universities was done under the NKMC4AER subproject of ICAR-NAHEP(IG) during the project period.

Sl. No.	Name of University/Constituent College	Number of instances
1.	**PVNR Telangana Veterinary University, College of Veterinary Science, Rajendranagar, Hyderabad, Telangana.**	1.College of Veterinary Science, Rajendranagar 2. College of Veterinary Science, Korutla, Jagtial Dist. 3. College of Veterinary Science, Mamnoor, Warangal Dist. 4. College of Dairy Technology, Kamareddy, Nizamabad Dist. 5. College of Fishery Science, Pebbair, Wanaparthy Dist.
2.	**University of Agricultural Sciences (UAS), Raichur, Karnataka.**	1.College of Agriculture, Raichur, Karnataka. 2.College of Agriculture, Kalaburagi, Karnataka.

		3. College of Agriculture, B.Gudi, Karnakata.
3.	**Kamdhenu University, Gujarat.**	1. College of Dairy Science, Amreli, Gujarat.
4.	**Sri Konda Laxman Telangana State Horticultural University (SKLTSHU), College of Horticulture, Rajendranagar, Hyderabad, Telangana.**	1.College of Horticulture, Rajendranagar, Hyderabad.
5.	**ICAR-IIHR, Hesaraghatta, Bengaluru, Karnataka.**	1. ICAR-Indian Institute Of Horticultural Research, Hesaraghatta,Bengaluru, Karnataka.
6.	**Professor Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad, Telangana.**	1. College of Home Science, Saifabad, Hyderabad. 2. College of Agricultural Engineering, Kandi, Medak District. 3. Agricultural College, Polasa, Jagtial District 4. Agricultural College, Aswaraopet, Bhadradri Kothagudem District. 5. College of Food Science & Technology, Rudrur, Nizamabad District. 6. Agricultural College Palem, Nagarkurnool District.
7.	**University of Agricultural Sciences (UAS), Dharwad, Karnataka.**	1. College of Agriculture, Dhrawad. 2. College of Agriculture Vijayapur (Bijapur). 3.College of Agriculture Hanumanmatti (Haveri dist). 4. College of Forestry, Sirsi.
8.	**Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Maharashtra.**	1. Post Graduate Institute of Post Harvest Management, Raigad 2. College of Agricultural Engineering and Technology, Dapoli 3. Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli
9.	**Maharana Pratap University of Agriculture & Technology, Udaipur, Rajasthan.**	1. College of Dairy & Food Technology, Udaipur.
10.	**Acharya Narendra Deva University of Agriculture & Technology, Kumargunj, Ayodhya, Uttar Pradesh.**	1. Nehru Library, University College, Ayodhya
11.	**Dr. Y.S.R. Horticultural University, Andhra Pradesh.**	1. College of Horticulture, Chinalataripi
12.	**Bidan Chandra Krishi Viswa Vidhyalaya, Mohanpur, West Bengal.**	1. University Library

Objective 3: ***To strengthen the Krishikosh platform- a digital repository for dissemination of agricultural knowledge generated under NARES.***

One of the important objectives of the project is to strengthen the Krishikosh platform- a digital repository for dissemination of agricultural knowledge generated under NARES. Krishikosh (https://krishikosh.egranth.ac.in) is a versatile open access digital repository catering to the needs of NARES and has architecture of centralized hosting of content but decentralized management. The Krishikosh is hosted at the data center of Indian Agricultural Research Institute (IARI), the premier research institute and deemed university under NARES. Each institute or university can manage and administer its own repository which is integral part of Krishikosh. This digital repository captures, preserves, archives and provides policy based access to the intellectual output of Indian NARES. It is a unique repository of knowledge in agriculture and allied sciences, having collection of old and valuable books, institutional publications, technical bulletins, project reports, lectures, preprints, reprints, thesis, records and various documents spread all over the country in different Research Institutions and State Agricultural Universities (SAUs). A customized digital repository platform for users of NARES Institutions, where they can upload and manage their own contents for compliance to open access policy of ICAR.

Platform for KrishiKosh

It has been designed using open source software Dspace which has an efficient Integrated Content Management System (ICMS), suitability configured to meet the requirements of NARES and created dependable digital repository. Dspace is based on three-layer architecture which consists of storage layer, logical layer, application layer and each layer includes various components. The storage layer is responsible for physical storage of metadata and content. The logical layer managing the content of the archive, users of the archive (e-people), authorization, and workflow. The application layer contains components that communicate with the world outside of the individual Dspace installation. The lowest layer is the storage layer which consists of relational database, viz. postgreSQL (Structured Query Language) and bitstream storage module for storing the data and metadata respectively. The relational database management system (postgreSQL) is an open source licensed software, i.e. there will be no barriers to implement Dspace anywhere or if the system deals with multiple instances. JDBC (Java Database Connectivity), which defines how a user may access postgreSQL. Each institution in NARES has been configured as community in DSpace having its own collections and logo. Each community and collection

can be given independent rights to registered users for uploading and managing the contents. Thus, Krishikosh is a collectively managed, centrally aggregated repository with integrated search facility. At present Krishikosh digital repository has 40 million digitized pages in **Two lakh ten thousand digital items** (volumes) like old books, old Journals, reports, proceedings, reprint, research highlights, training manuals, historical records, which includes more than **one lakh Fifty thousand theses** digitized from various NARES Institutes / SAUs. The number of M.Sc, Ph.D, M.V.Sc and M.Tech including MBA & Others thesis available in the Krishikosh repository are 95762, 32682, 17124 and 4256 respectively. The Institute/Agricultural Universities wise thesis submitted in the Krishikosh repository from April 2018 to March, 2021 are given in table 1

Table: 1: Year wise theses uploaded on Krishikosh repository from various University

S.No	State	State Agricultural University	Till March, 2019	Till March, 2020	Till March, 2021
1	AP	ANGRAU, Hyderabad	573	1062	1590
2	AP	DYSRHU, Venkatramannagudem	389	388	388
3	AP	SVVU, Tirupati	1754	1803	1853
4	AS	AAU, Jorhat	205	299	501
5	BIR	BAU, Sabour	90	136	177
6	BIR	DRPCAU, Pusa , Bihar	327	425	584
7	BIR	BASU, Patna	431	729	729
8	CG	CKV, Durg	125	374	402
9	CG	IGKV, Raipur	3506	3810	4038
10	DEL	IARI, New Delhi	4881	5286	5466
11	GJ	AAU, Anand	4524	4762	4911
12	GJ	JAU, Junagarh	1935	2002	2020
13	GJ	KU, Amreli	11	19	19
14	GJ	NAU, Navsari	2166	2534	2544
15	GJ	SKDAU, Dantiwada	0	327	460
16	HR	CCSHAU, Hisar	8158	8500	8517
17	HR	LLRUVAS, Hisar	594	624	624
18	HR	NDRI, Karnal	2787	4774	5070
19	HP	CSKHPKV, Palampur	2250	2485	2570

20	HP	DYSPUHF, Solan	3951	4415	4740
21	J&K	SKUAST, Kashmir	462	559	847
22	J&K	SKUAST, Jammu	358	454	602
23	JHR	BAU, Ranchi	640	684	684
24	KAR	KVAFSU, Bidar	426	1749	1852
25	KAR	UAHS, Shimoga	3	3	323
26	KAR	UAS, Bengaluru	3899	12738	13160
127	KAR	UAS, Dharwad	2382	5412	5485
28	KAR	UAS, Raichur	74	707	993
29	KAR	UHS, Bagalkot	413	522	737
30	KL	KAU, Thrissur	1560	4163	5658
31	KL	KUFOS, Kochi	5	5	5
32	KL	KVASU, Wayanand	38	434	708
33	MIZ	CAU, Imphal (Phasighat)	57	78	93
34	MP	JNKVV, Jabalpur	4802	8020	8283
35	MP	NDPCVV, Jabalpur	746	925	925
36	MP	RVSKVV, Gwalior	1565	1808	1915
37	MS	CIFE, Mumbai	761	857	1187
38	MS	DBSKVV, Dapoli	674	790	886
39	MS	DPDKV, Akola	610	2747	3593
40	MS	MAFSU, Nagpur	3043	3377	3526
41	MS	MPKV, Rahuri	6121	8577	8039
42	MS	VNMKV, Parbhani	6799	7154	7807
43	ORI	OUAT, Bhubaneswar	5203	5320	5326
44	PB	GADVASU, Ludhiana	796	1473	1688
45	PB	PAU, Ludhiana	2419	5679	5902
46	RAJ	MPUAT, Udaipur	1500	1653	2143
47	RAJ	RAJUVAS, Bikaner	394	1239	1239
48	RAJ	SKNAU, Jobner	593	1623	1707
49	RAJ	SKRAU, Bikaner	631	685	685
50	RAJ	AU, Jodhpur	0	14	15
51	RAJ	AU, Kota	0	21	57
52	TEL	PJTSAU, Hyderabad	8395	8538	8701
53	TEL	SKLTSHU, Hyderabad	0	102	102
54	TEL	SPVNRTVU, Hyderabad	205	284	336

55	TN	TNAU, Coimbatore	1520	2072	3070
56	TN	TNFU, Nagapattinam	150	196	279
57	TN	TNVASU, Chennai	2792	3142	3190
58	UK	GBPAUT, Pantnagar	2395	3407	3653
59	UK	UUHF, Bharsar	85	111	111
60	UP	AMU, Aligarh	-	-	-
61	UP	BUAT, Banda	0	0	12
62	UP	CSAUAT, Kanpur	185	186	186
63	UP	IVRI, Izatnagar	1106	3114	3760
64	UP	IAgS, BHU, Varanasi	704	1095	1117
65	UP	NDUAT, Faizabad	118	168	400
66	UP	DUVASU, Mathura	1014	1960	2501
67	UP	RLBLAU, Jhansi	-	-	
68	UP	SHIATS, Allahabad	291	513	513
69	UP	SVPUAT, Meerut	93	93	94
70	WB	BCKV, Mohanpur	279	794	794
71	WB	UBKV, Cooch Behar	383	452	530
72	WB	VB, WB	-	-	-
73	WB	WBUAFS, Kolkata	1039	2047	2047
		Total theses in Krishikosh Repository	**106385**	**151436**	**164669**

The month wise theses uploaded in this repository from April , 2018 are given in fig. 1

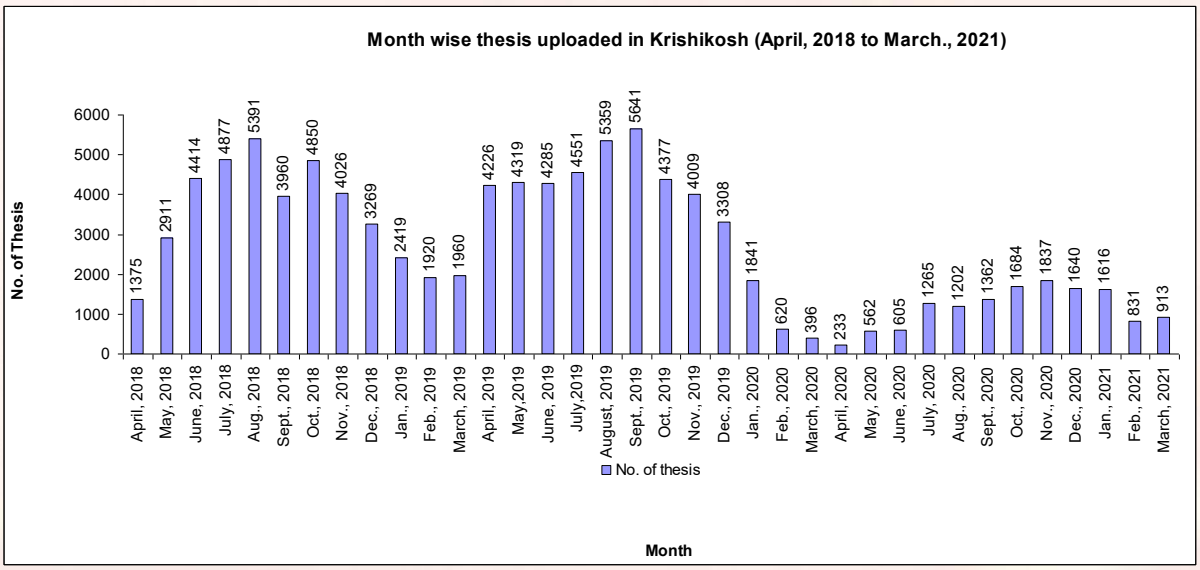


Fig. 1: Month wise theses uploaded in Krishikosh digital repository

Krishikosh repository have theses from 1948 submitted to various NARES organization, the year wise numbers of theses (from 1980) available in this repository are presented in Fig 2.

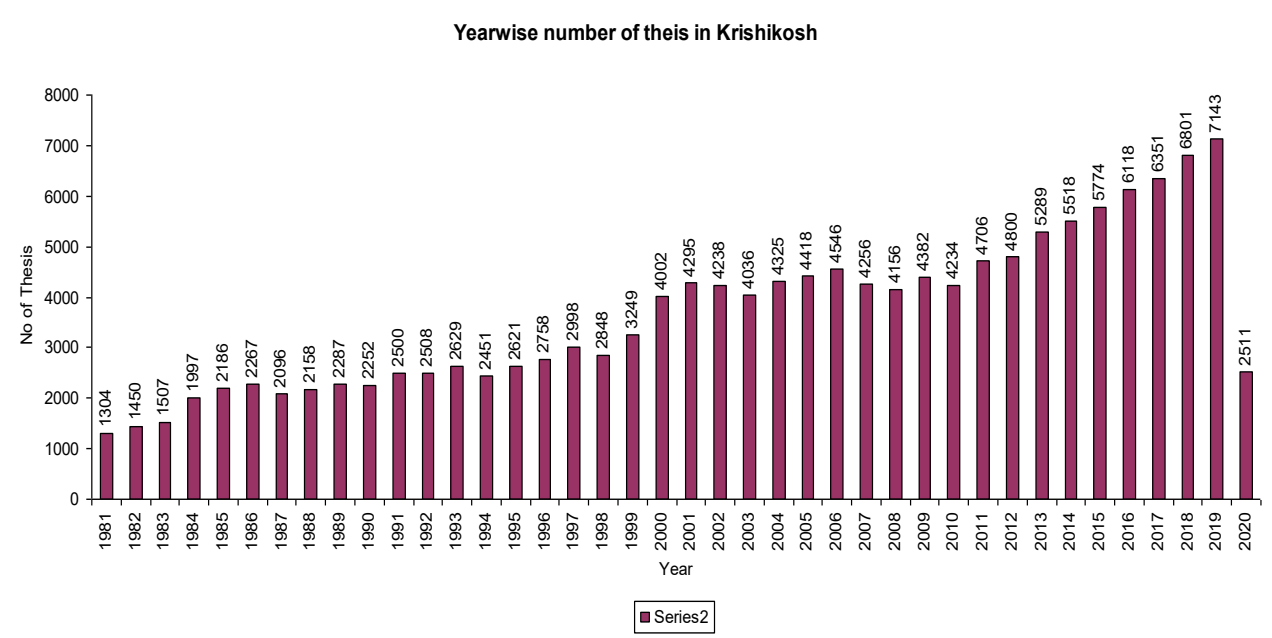
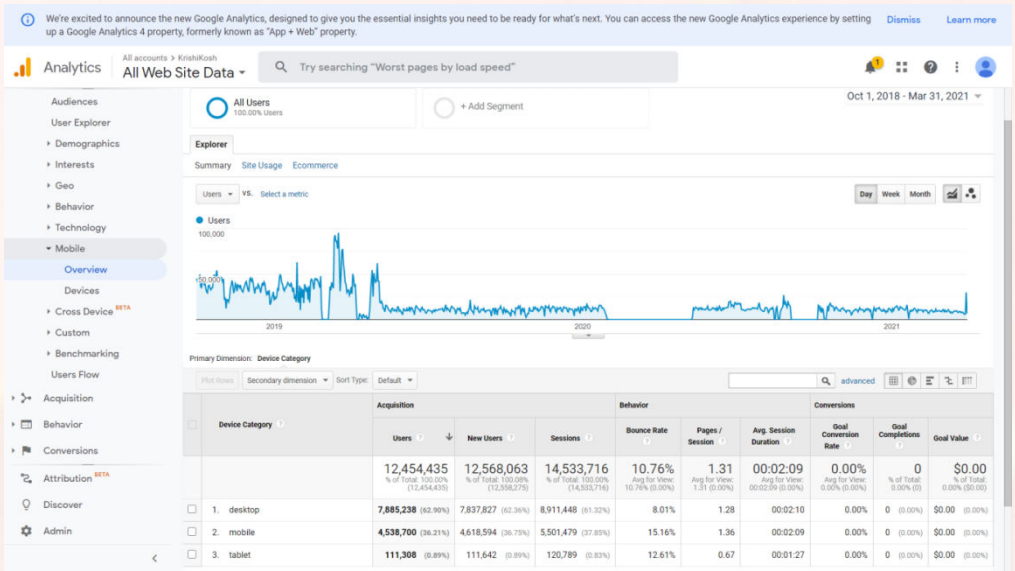


Fig. 2: Year wise (from 1980 onwards) number of theses in Krishikosh repository

***Usages* of Krishikosh**

Google analytics of Krishikosh during October 2017 - July 2020 indicates that 1,24,54,435 hits are on Krishikosh website. India, United States, Sudan, China, Philippines, Nigeria, Ethiopia, Russia, UK and Indonesia are the top ten countries who visited this digital platform. The average daily hits on this digital repository during Oct., 2018 to March 2021 were 13838 all over world.



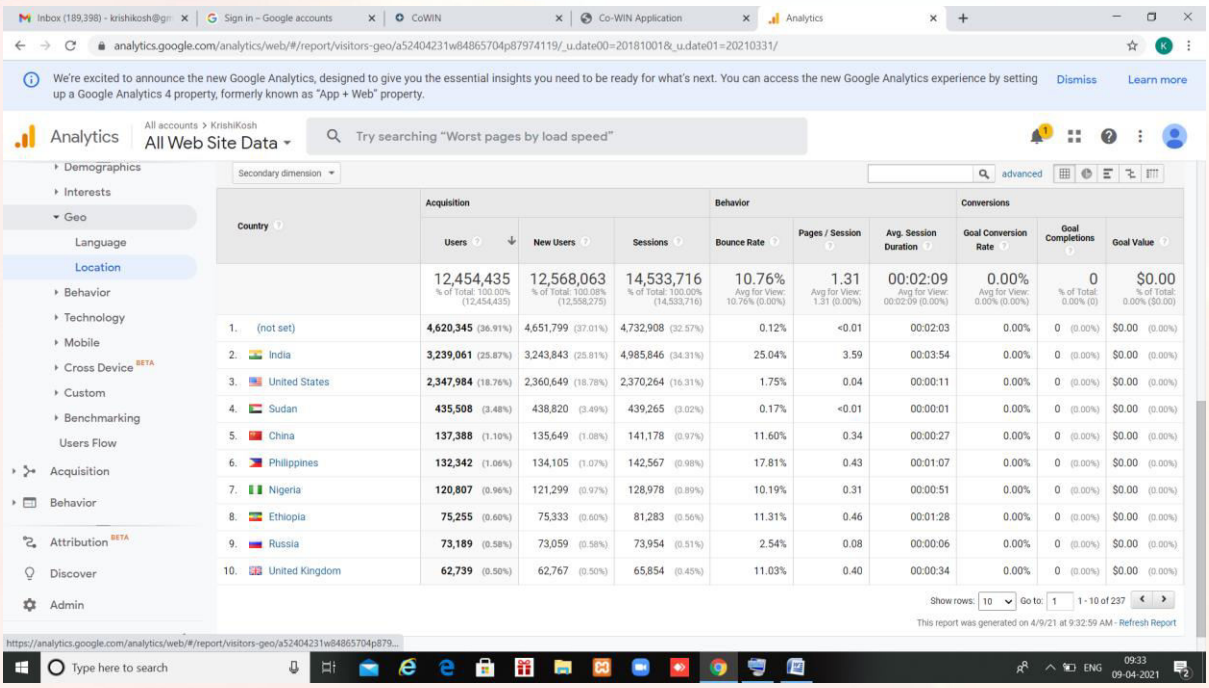


Fig. 3: Usage statistics of Krishikosh

The users visits, Krishikosh through various devices such as mobiles, laptops, desktops etc. Currently, desktop users are more than mobile and laptop users, but with growing popularity of mobile application of Krishikosh, mobile users will increase rapidly. Krishikosh repository was viewed by 175 countries. Through Google analytics its shown that Krishikosh is visited through various browsers which also shows that this portal is independent of the browsers platform. It can be viewed via any web portal system in the world. Usage statistics for community, collection, items are configured with Dspace to provide the usage details of the server to the administrators of Krishikosh (http://wiki.duraspace.org). Statistics on total visits of the communities, collections, items, etc. countries along with cities from where the visits originate are available on this repository. The top ten countries who visited Krishikosh site in terms of uses are presented below table 2.

Table 2: Top ten countries who visited Krishikosh

S.NO.	Country	Users	User Percentage
1	India	3239061	25.8
2	United States	2347984	18.7
3	Sudan	435508	3.48
4	China	137388	1.10

5	Philippines	132342	1.06
6	Nigeria	120807	0.95
7	Ethiopia	75255	0.60
8	Russia	73189	0.58
9	UK	62739	0.50
10	Indonesia	61258	0.48

Usage statistics during Covid-19 especially the lockdown period (From April to May, 2020)

Google analytics of Krishikosh during April 2020 and May 2020 indicates that monthly average hits on this repository are 693295. During this periods, the India, United States, China, Russia, and Philippines are top five countries who visited this digital platform. The average daily hit on Krishikosh in pre covid-19 era and lockdown periods are presented in Table 3. This indicates that the there is no effects of lockdown due to covid-19 for users of Krishikosh repository.

Table 3: The average daily hit on Krishikosh in pre covid-19 and lockdown periods in India

Era	Average Daily hits	Top 10 Countries
Pre covid-19 period (April, 2019 to Mar., 2020)	12186	United States, India, Sudan, China, Russia
During lockdown period due to Covid-19 (April-May, 2020)	11554	India, United States, China, Russia, and Philippines

Text *Mining* for Knowledge extraction

Similarity Detection in two documents

In text mining, a similarity (or distance) measure is the quintessential way to calculate the similarity between two text documents, and is widely used in various Machine Learning (ML) methods, including clustering and classification. Among ML methods, classification and clustering help discover patterns and correlations and extract information from large-scale collections. These two techniques also offer benefits to different IR applications. For

example, document clustering can be applied to the document collection to improve search speed, precision, and recall or to the search results to provide more effective information presentation to user . Document classification is also used in vertical search engines and sentiment detection. In large-scale collections, one of the challenging issues is to identify documents with high similarity values, known as near-duplicate documents (or near-duplicates) . Integration of heterogeneous collections, storing multiple copies of the same document, and plagiarism are the main causes for the existence of near-duplicates. These documents increase processing overheads and storage. Detecting and filtering near-duplicates can address these issues and also improve the search quality. Using a similarity measure is a quantitative way to define two documents as near-duplicates. Most of the similarity measures judge the closeness of two documents to each other based on the term weights. Although, term weights provide important information about the similarity between two documents, sometimes similarity judgment based on the term weights alone is not sufficient. The Cosine Similarity, **Jaccard Similarity** and **Locality-Sensitive Hashing (LSH)** approach is being utilized to compute the similarity between two text documents. Cosine similarity is a metric used to determine how similar the documents are irrespective of their size. Mathematically, it measures the cosine of the angle between two vectors projected in a multi-dimensional space. It is the cosine of the angle between two vectors. It calculates similarity by measuring the cosine of angle between two vectors. With cosine similarity, sentences are converted into vectors. In text analysis, each vector can represent a document. The greater the value of θ, the less the value of $\cos \theta$, thus the less the similarity between two documents. In this context, the two vectors are arrays containing the word counts of two documents, the cosine similarity captures the orientation (the angle) of the documents and its magnitude are computed by the Euclidean distance. **Jaccard Similarity** - It is intersection over union is defined as size of intersection divided by size of union of two sets. **Locality-Sensitive Hashing (LSH)** - it is a method which is used for determining which items in a given set are similar. items are hashed into buckets, such that similar items will be more likely to hash into the same buckets. As a result, the number of comparisons needed will be reduced; only the items within any one bucket will be compared. A MinHash is created for every set and when a query comes, the Jaccard similarities are computed between the query MinHash and all the MinHash of your collection, and return the sets that satisfy your threshold. Text similarity has to determine how close text/keywords of two document. To calculate similarity of two document similarity measure functions are used. This tool is able to detect top 5 existing similar document with

uploaded documents along with percentage of similarity using Cosine Similarity Measure Tool. For implementation of tool Python 3.6.3 programming language is used and HTML code is used for front end development.

Keyword Extraction Tool through natural language processing (NLP)

NLP is a subfield of computer science and artificial intelligence concerned with interactions between computers and human (natural) languages. It is used to apply machine learning algorithms to text and speech. For example, we can use NLP to create systems like speech recognition, document summarization, machine translation, spam detection, named entity recognition, question answering, auto-complete, predictive typing and so on.

At the intersection of computational linguistics and artificial intelligence is where we find natural language processing. Very broadly, natural language processing (NLP) is a discipline which is interested in how human languages, and, to some extent, the humans who speak them, interact with technology. Keyword extraction is defined as the task that automatically identifies or extracting the most relevant words and expression or set of the terms that best describe the subject of document.

Different terminology is used in studying the terms that represent the most relevant information contained in the document: key phrases, key segments, key terms or just keywords. Keywords also play a crucial role in locating the article from information retrieval systems, bibliographic databases and for search engine optimization. Keywords also help to categorize the article into the relevant subject or discipline. Relevant extracted keywords can be used to build an automatic index for a document collection or alternatively can be used for document representation in categorization or classification tasks. An extractive summary of the document is the core task of many IR and NLP applications include automatic indexing, automatic summarization, document management, high-level semantic description, text, document or website categorization or clustering, cross-category retrieval, constructing domain-specific dictionaries, name entity recognition, topic detection, tracking, etc.

A model for extracting keywords based on their relatedness weight among the entire text terms. Strength of terms relationship is evaluated by frequency of word. **Keyword Extraction Tool** (KET) is extracting keywords based on their relatedness weight among the entire text terms. Strength of terms relationship is evaluated by frequency of word. The two approach viz., TF-IDF (Term frequency-inverse document frequency) and Latent Semantic Analysis

(LSA) were utilized to developed the keyword extraction system. In TF-IDF, has following steps (i) preprocess your text (remove punctuations and stop words) (ii) tokenize the text (iii) stem the tokens (iv) find the TF(term frequency) for each unique stemmed token present and (v) rank the stemmed tokens(keywords). This algorithm can extract uni-gram, bi-gram or tri-gram. Its programming code was written in Python language and implementing libraries like NLTK (Natural Language Tool Kit). **Latent Semantic Analysis (LSA),** also known as LSI (Latent Semantic Index) uses bag of word (BoW) model, which results in a term-document matrix (occurrence of terms in a document). LSA extracts latent keywords by performing matrix decomposition on the document-term matrix using Singular value decomposition (SVD). One main advantage of LSA is that it is used as a dimension reduction or noise reducing technique. **Keyword Extraction is** built on the observation that keywords usually contain multiple informative words (called content words) but not punctuation and stop words. For implementation of tool **Keyword Extraction Tool,** Python 3.6.3 programming language is used and HTML code is used for front end development.

Keyword extraction (KE) is defined as the task that automatically identifies or extracting the most relevant words and expression or set of the terms that best describe the subject of document. Different terminology is used in studying the terms that represent the most relevant information contained in the document: key phrases, key segments, key terms or just keywords. Keywords also play a crucial role in locating the article from information retrieval systems, bibliographic databases and for search engine optimization. It also help to categorize the article into the relevant subject or discipline. Keyword extraction enriches a document with keywords that are explicitly mentioned in text. Words that occurred in the document are analyzed in order to identify the most representative ones, usually exploring the source properties (i.e. frequency, length). In agriculture, scientists actively seek to discover procedures that will increase livestock and crop yields, improve farmland productivity, reduce loss due to disease and insects, develop more efficient equipment, and increase overall food quality. There is lots of research article available on internet related to agricultural science. Agriculture science is very vast subject in terms of research so that it difficult to read each and every document. Keyword extraction from research article gives insight to agricultural researcher about area of research and key concept of article. This algorithm developed which have six steps to retrieve top keyword from text documents. (1) Text Pre-Processing (2) Data Exploration (3) Generation of key phrase or bi-gram and tri-gram (4) computing frequency of candidate keyword (5) Removal of similar terms (6) Comparison of

Keyword list with agricultural based dictionary. In this approach statically analysis has been use for weightage of term and compare list with dictionary and arrange all extracted keyword on the basis of ranking.

Text Pre-Processing

Text Pre-Processing is first step to for keyword extraction. In this first convert all file format into text form and convert text into list of terms. In text pre-processing it includes various in which first convert complete text into lower case and tokenized. Further in pre-process into two parts (1) Noise Removal (2) Normalization of data. In first step remove noise from text it includes removal of redundant words, all punctuations (comma, question marks, hyphens etc.), tags, URLs, and stop word (is, a, the, am etc.). After completing first step normalization of data has been done in two parts by doing stemming and lemmatization.

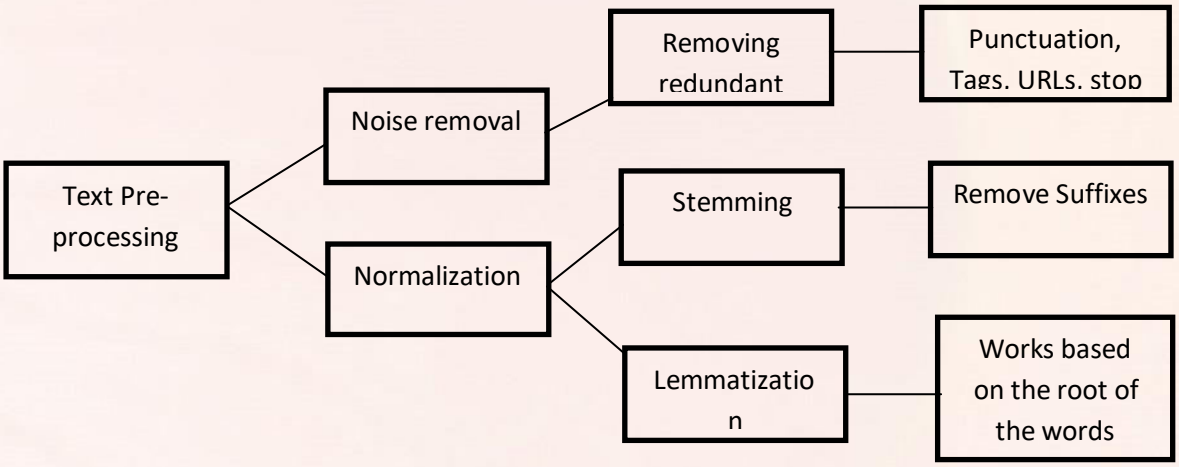


Fig 4. Steps of text pre-processing in keyword extraction

As shown in fig. 4, Text Pre-processing is, generally, an early step in the NLP process, in this step remove noise from text data of document. Text Pre-processing process divided into two process normalization and noise removal.

Noise Removal **:** In this step generally removes all URL, removing punctuation, tags and stop wards. Stop words are those words which are filtered out before further processing of text, since these words contribute little to overall meaning, given that they are generally the most common words in a language. For instance, "the," "and," and "a," while all required words in a particular passage, don't generally contribute greatly to one's understanding of content.

Normalization **:** Before further processing, text needs to be normalized. Normalization generally refers to a series of related tasks meant to put all text on a level playing field:

converting all text to the same case (upper or lower), expanding contractions, converting numbers to their word equivalents, and so on. Normalization puts all words on equal footing, and allows processing to proceed uniformly. After this it further divided into two steps stemming and Lemmatization.Stemming is the process of eliminating affixes (suffixed, prefixes, infixes, and circumfixes) from a word in order to obtain a word stem. Lemmatization is related to stemming, differing in that lemmatization is able to capture canonical forms based on a word's lemma.

Data Exploration

After pre-processing of text of document all noise or non-relevant term are removed and remaining content which are more relevant to topic of article but all words are not relevant or all words are not valid term of extraction keyword. In the process of refinement or extracting more relevant words further process data by tokenization of data. Tokenization is, a step which splits longer strings of text into smaller pieces, or tokens. Text tokenized into two parts sentences and sentences tokenized into words or terms.

Key phrase Generation

In the process of tokenization text data is converted into two set one is collection of single terms and collection of sentence further processing the data by Parts-of-speech (POS) Tagging. POS tagging would be identifying words as nouns, verbs, adjectives, etc. In our algorithm from single term set data only noun tagged word are taken as keyword or relevant keyword set. Set of sentence tokenized is use for generation N-gram words. N-grams are combinations of one or more words that represent entities, phrases, concepts, and themes that appear in text. Extraction. By using N-gram chunking method it was found that many of the candidates generate do not qualify as a phrase and hence are not potential keywords. For Example in the sentence: 'Development transcriptome web genomic resources drought responsiveness black pepper'. N-gram chunking would result in many non-relevant keywords like: 'Development, 'transcriptome, 'web', 'genomic, 'resources, 'responsiveness, 'black ', 'pepper', 'Development transcriptome' , 'transcriptome web' , 'web genomics', 'web genomic resources', 'genomic resources', 'resources drought', 'drought responsiveness', etc. In all, N-Gram chunking selects 24 candidates out of which only five are relevant keywords. Having so many trivial irrelevant keyword phrases in the set of candidates increases the processing time of the system and also affects the accuracy of the system. These proper

phrases usually follow certain POS patterns. These POS patterns can be learned from the manually annotated data. One way to learn from the data is to pick the most frequent patterns from the data (Hulth, A. (2003)). In our case, we found that the frequent patterns contained one or more noun tags (NN, NNP, NNS and NNPS) along with adjective tags (JJ) and verb phrases (VB).

By Tagging reduces trivial keywords that are present in the set of candidates. For the sentence described above, POS chunking would only select following eight candidates: Transcriptome, web, genomic, drought, black, pepper, web genomic, black paper, web genomic resources Thus, for a sentence of length nine words, 15 irrelevant candidates are reduced using POS chunking method. The average reduction in the number of candidates is found to be 65% in comparison with N-Gram approach. We only consider candidates up to length four, because very few phrases of length greater than four follow the patterns. Among the candidates of length greater than four, negligible number of candidates stood as relevant keywords.

Converting to a matrix of integers

After the process of POS tagging got set of relevant candidate keyword and Ker phrase set which are K={k1,k2,k3,k4…….,kn} and KP= {kp1.kp2,kp3,kp4….kpn} respectively. Another way to remove trivial word from candidate term is that more frequently the word occurred in text is more relevant to topic of document. In the next step we count the frequency all candidate keyword and key phrase in document. Frequency of each candidate term is define as Ktf = {n1, n2, n3 …n}, and KPtf = {n1, n2, n3 …n}, contains frequency count to corresponding keyword and key phrase and arrange list of keyword and key phrase according to frequency (most frequent word of document is on top of list).In next step of our algorithm combine list of maximum top 50 term and top 50 key phrase on the basis of frequency.

$$FK = Kn + KPn$$

FK is list of final keyword having combine list of n keyword and key phrase where n <=50.

Deduction of similarity

In Merged list there may be similarity between key phrase and term to remove this we use first we calculate similarity between all final keyword terms and remove redundant words

from final list. Similarity is calculated by distance between all token in list using Levenshtein Distance.

The **Levenshtein distance (a.k.a edit distance)** is a measure of similarity between two strings. It is defined as the minimum number of changes required to convert string a into string b (this is done by inserting, deleting or replacing a character in string a). The smaller the Levenshtein distance, the more similar the strings are(Grineva et al. (2009)).

The approach here is somewhat simple and intuitive. Consider the strings a and b up to their last character: If the last characters of both strings are the same, then the edit distance is equal to the edit distance of the same two strings, up to their second-to-last character. If the last character is different, then the edit distance is equal to the *minimum* of the cost of inserting, deleting, or replacing the last character of string a. 2D array (D) were used for this purpose.The value in D[i][j] represents the edit distance if we consider the strings a and b, till their ith and jth character, respectively. Therefore, the answer to the original problem will be found in D[length of 'a'][length of 'b']. Mathematically, the Levenshtein distance between two strings a and b (of length |a| and |b| respectively) is given by leva,b (|a|,|b|) where

$$\text{leva, b } (\text{i, j}) = \begin{cases} \max(i,j) & f \min(i,j) = 0, \\ min \begin{cases} \text{leva, b } (\text{i}-1,\text{j}) + 1 \\ \text{leva, b } (\text{i},\text{j}-1) + 1 \\ \text{leva, b } (\text{i}-1,\text{j}-1) + 1(\text{ai} \neq \text{bj}) \end{cases} & otherwise \end{cases}$$

where is $1(\text{ai} \neq \text{bj})$ the indicator function equal to 0 when ai ≠ bj and equal to 1 otherwise, and leva,b is the distance between the first i characters of a and the first j characters of b. Note that the first element in the minimum corresponds to deletion (from a to b), the second to insertion and the third to match or mismatch, depending on whether the respective symbols are the same.After calculation of Levenshtein distance remove those word which are 100 % similar to other word and get updated final list of Keywords frequancy wise.

Comparison of Keyword list with agricultural based dictionary

In last step of our algorithm compare final list all candidate keyword with agriculture based Dictionary. Developed algorithm basically dedicated to agricultural based keyword and keyphrase extraction so final list of candidate term (FK= {t1,t2,t3,t4,.....,tn}) are matched with dictionary term (W dictionary = {w1,w2,w3,w3,……wn}), those terms are present in dictionary are relevant terms and included into final list of keyword.

Final TF= FK ∩ W dictionary

Dictionory uses in our tool is totaly based on agricultural termionolgy. It inhareted more than one lakh words. These terminology are taken from two agricultural related site Food and agricuture organization (FAO) and U.S. Department of Agriculture (USAD).

Case study

The Experimental data in this paper selected from agricultural based journals randomly. In this experiment we take around 20 research paper. For dataset keyword are extracted manually or author assigned keyword and 5, 10, 15 keyword extracted from each paper. For the same data set different amount of keywords are extracted .In the experiment we compare three method TF-IDF, Graph method and KET algorithm which is proposed in this paper. We adopt precision, recall, and F-measure to evaluate the performance of keyword extraction method. The formula for comparison is define below:

Precision = $1/n \sum_{i=0}^{n} |P1 \cap T1| / |P1|$

Recall = $1/n \sum_{i=0}^{n} |P1 \cap T1| / |T1|$

F-Measure = (2 * Precision * Recall) / (Precision + Recall)

Where P1 is extracted keyword from the algorithm and T1 is actual keyword extracted manually. Precision (P) gives a measurement of how relevant the keywords are to the actual desired keywords .Recall (R) gives a measurement of how much of the relevant data was accurately extracted. F-Measure is comprehensive measure of the combination of P and R. This value is directly reflect the extraction effect of the keywords extraction algorithm. Keyword extraction tool is for extraction of agricultural based keywords (includes Bigram, Trigram words). In this model for extracting keywords based on their relatedness weight among the entire text terms. Strength of terms relationship is evaluated by frequency of word. KET is extracting keywords based on their relatedness weight among the entire text terms. Strength of terms relationship is evaluated by frequency of word. KET is built on the observation that keywords usually contain multiple informative words (called content words) but not punctuation and stop words. The process or flow of KET was presented in Fig. 5. For implementation of tool Python 3.6.3 programming language is used and HTML code is used for front end development. In Keyword Extration Tool (KET) user can upload PDF and select

range of keyword (5-20) after submiting keywords are extracted. This tool is available on http://14.139.56.94/nkmc4aer/pyscripts/ket_upload.py web link.

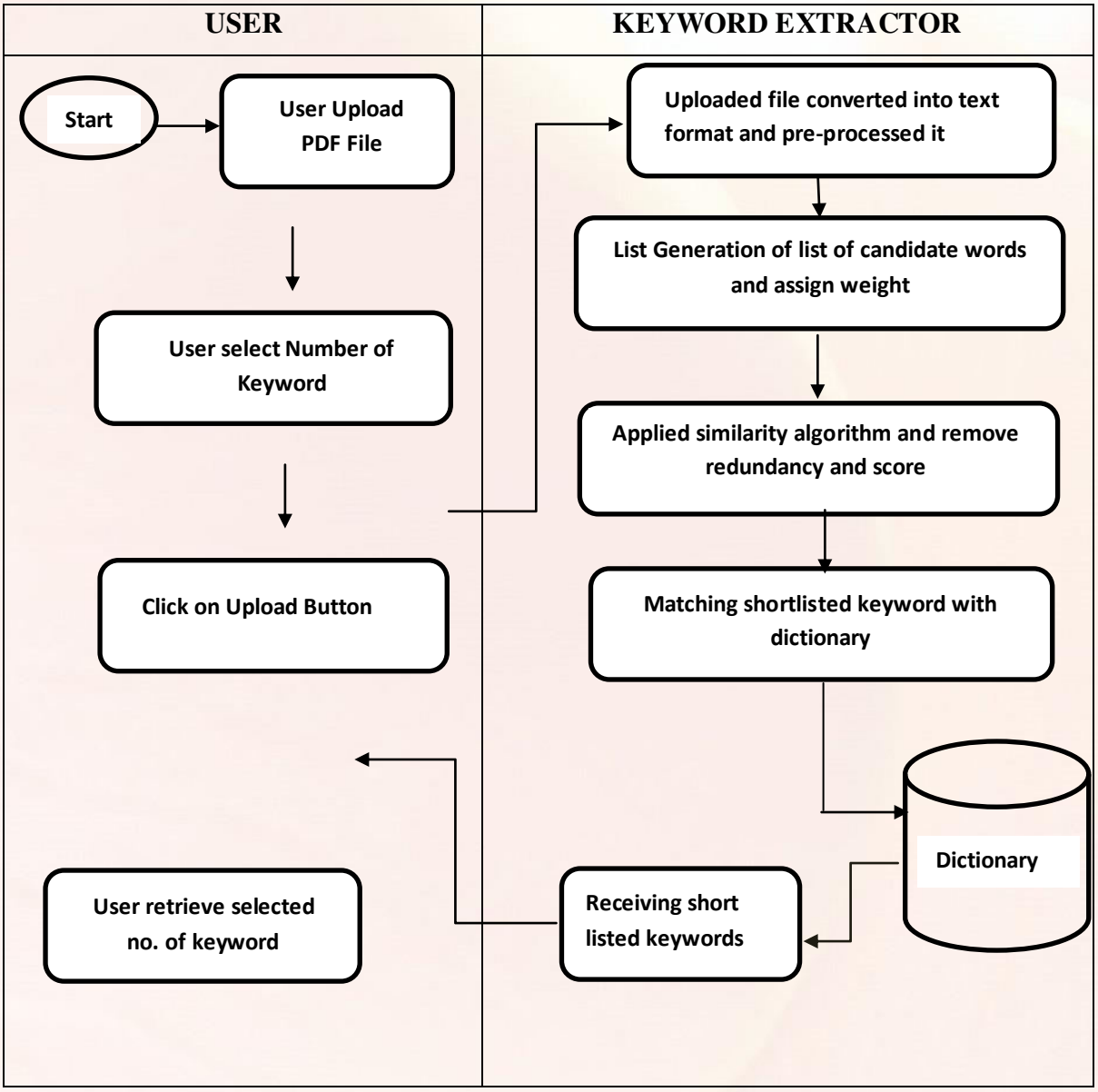
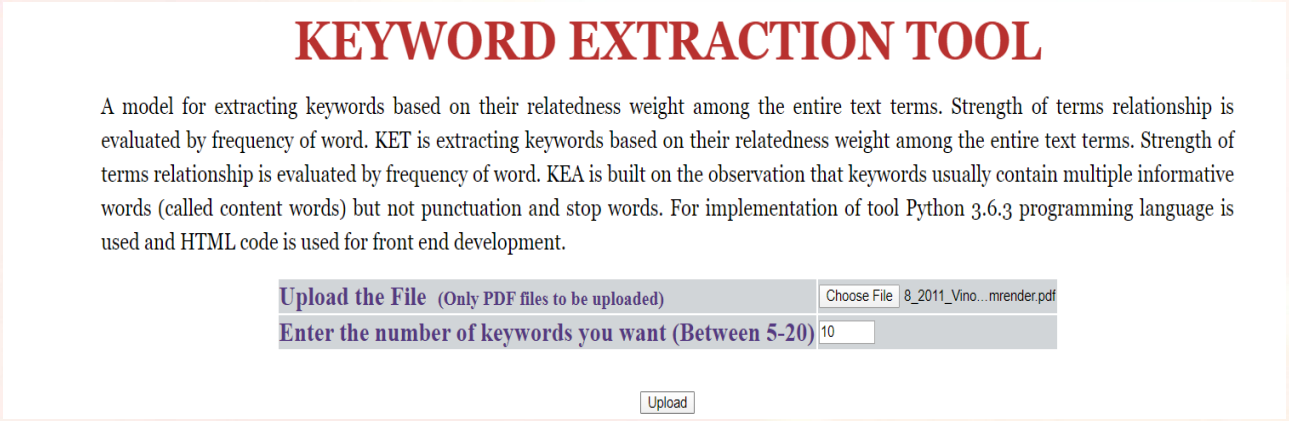


Fig. 5 Process or Flow KET (Keyword Extraction Tool)



Technology foresight through bass diffusion models

Bibliometric analysis, a technique for conducting a meta-review of the literature that can help identify both general trends in the development of a field of study and the most influential scholars in the field through an analysis of published scientific works. Identification of the most influential scholars is based on the assumption that researchers ground their studies in previously published academic research and then publish their work in academic journals. There are several ways to measure the scholarly impact of scientific researchers, including counting the total number of their publication and surveying scholars and administrators through an a Delphi method. However, the number of publications alone does not necessarily indicate the quality of the research or its impact on the field, while surveys are subject to bias. Citation analysis — an examination of how an article is cited by other scholars and journals – is a more objective method. The references of a scientific paper indicate the theoretical and empirical foundations of the study, and an analysis of the references cited within a body of literature makes it possible to identify the structure of a scientific discipline, the trends that developed within it, and networks of authors and papers that belong to the same school, paradigm, or theory. By taking the citation as the unit of analysis, bibliometric research

analyzes which authors and papers are cited frequently and produce a map of research streams and the relationships between and within them. Bibliometric research has been widely used in management research, encompassing corporate social responsibility, strategic management, organizational behavior, international management, operations management, and family businesses and technology forecasting. Bibliometric analysis provides a detailed examination of bibliographic data, usually in the form of an electronic database such as ISI Web of Science database, Science Citation Index – Expanded (SCI), the Social Sciences Citation Index (SSCI), and the Arts and Humanities Citation Index (A&HCI). It can identify key literature in a research field, including works that might be missed by a search in a standard electronic database, identify the most prolific and the most cited authors within a field, and reconstruct the history and development of a research field. It was assumed that technological innovation is highly correlated with the number of research publications. Daim et al. (2006 and 2009) demonstrated that bibliometric analysis was a suitable tool for technology forecasting. Morris et al. (2002) utilizing DIVA(Database Information Visualization and Analysis system) in which the documents are visualized as clusters on a two dimensional map. Kostoff et al. (2001) present database tomography for textual database analysis extracting multiword phrase frequencies and determining phrase proximities using Science Citation Index (SCI) and the Engineering Compendex (EC) databases. Papers based Data mining techniques were presented by Porter et. al (2003) & Watts and Porter, A.L. (1997) used a proprietary software called the Vantage Point and studied the combination of bibliometrics techniques with other forms of technological evidence, naming it as innovation forecasting. Pilkington [2003, 2005) presented bibliometric applications in the area of engineering and technology management to identify hidden patterns classifying information by authors, organizations, countries, collaborations, co-citations, and so on. As the technology grows and matures, products based on that technology penetrate the market place. The rate of diffusion of this new technology primarily depends on the innovativeness (p) and peer recommendation (q). These two factors are taken into account and a formula for determining such diffusion is provided by the Bass model. In this paper, new keywords obtained from the thesis title submitted in Krishikosh repository were extracted with time frame, and diffusions and adoption rate of the important keywords were studies with the application of diffusion models

A Case study with prominent Keywords in Krishikosh Digital repository

Norton, (2001) define the Bibliometric as the measurement of texts and information. Bibliometric analysis to identify the "hidden patterns" in historical data generated in the form of text and information through literature which may help the researchers on the decision making process. Thus, It is a technique for Innovation forecasting seeks to find information about technology life cycle status, innovation context receptivity, and product value chain and market prospects. For this study bibliometric is intended to be used in an exploratory phase as a indicator for technology diffusion. Diffusion rate is obtained by the movement of bibliometric S-curve from development to commercialization stage. Martino (2003) presents bibliometric analysis into five categories as Basic research, applied research, Development, Application and Social impacts. These techniques can be used to determine the life cycle of technology at each category as the pattern which might be that the “hits” in basic research would rise to a peak, then decrease as the “hits” on applied research began to increase and so on for the next cycles.

Bass diffusion model

Bass (1969) proposed and tested an epidemiological model for the diffusion of consumer durables and other innovations. The Bass model shows how a new product or idea spreads through the user community by quantifying the introduction of new technologies depending on the take up by innovators and imitators. Basic formula can be described as follows:

- N(t) is the total or cumulative number of consumers that have already adopted the new product through period t.
- N(t - 1) is the cumulative number of adopters for the new product through the previous time period.
- S(t) is the number of new adopters for the product during the time period t. The Bass model has three key parameters: the total market size (m), coefficient of innovation (p), and coefficient of imitation (q). The Bass model asserts that the likelihood of an initial purchase being made at time (t) is a linear function of the number of the previous adopters, as shown in the following:
- P+(q/m)N(t-1) is the likelihood of purchase by a new adopter in time period t.
- M-N(t-1) is the number of consumers that have not previously adopted by the start of time period t.

- S(t) = [p+(q/m)N(t-1)][m-N(t-1)] is the number of new adopters during time t.

The model is used to predict technology introduction rates from a set of estimated values for the innovation and imitation factors. In the Bass model of diffusion, there is a market consisting of m consumers who will ultimately adopt. N(t - 1) is the number of people who have already adopted before time t. The model assumes that the probability that someone adopts given that he or she has not adopted yet consists of two factors. First, there is a fixed factor p that reflects people's intrinsic tendency to adopt the new product. Second, there is a factor q that reflects ''word-of-mouth'' or ''social contagion'', such that people are more likely to adopt the larger the proportion of the market that has already adopted. The model has three unknown parameters: the market size m, the coefficient of innovation p, and the coefficient of imitation q. These parameters can be estimated from real data concerning comparable technologies that have been introduced in the past, using standard statistical software. The parameters p and q provide us information about the speed of diffusion. A high value for p indicates that the diffusion has a quick start but also tapers off quickly. A high value of q indicates that the diffusion is slow at first but accelerates after a while. When q is larger than p, the cumulative number of adopters N(t) follows an S-curve often observed for really new product categories. When q is smaller than p, the cumulative number of adopters follows an inverse J-curve often observed for less risky innovations. Since the Bass diffusion model was presented in 1969 by Bass, it was widely used and worked very well. In 1994, Bass created a generalized Bass model that included decision variables (price, advertising), and demonstrated the generalized Bass model can be used in both diffusion forecasting and product planning purposes (Bass *et al.*, 1994).

The Bass model classifies adopters into two categories, innovators and imitators, which are expressed as

$$\frac{f(t)}{1-F(t)} = p + qF(t)$$

where f(t) is the likelihood of adoption at time t; F(t) is the fraction of the ultimate potential adopted by time t, p is the innovation coefficient, and q is the imitation coefficient. This equation can be written as

$$\frac{\frac{dN}{dt}}{m-N} = p + q\frac{N}{m}$$

where m is maximum (equilibrium) adoption potential, and m, which equals mF(t), is the total number of adopters in the interval (0, t). The solution for N is

$$N(t) = m\frac{1-e^{-(p+q)t}}{1+\frac{q}{p}e^{-(p+q)t}}$$

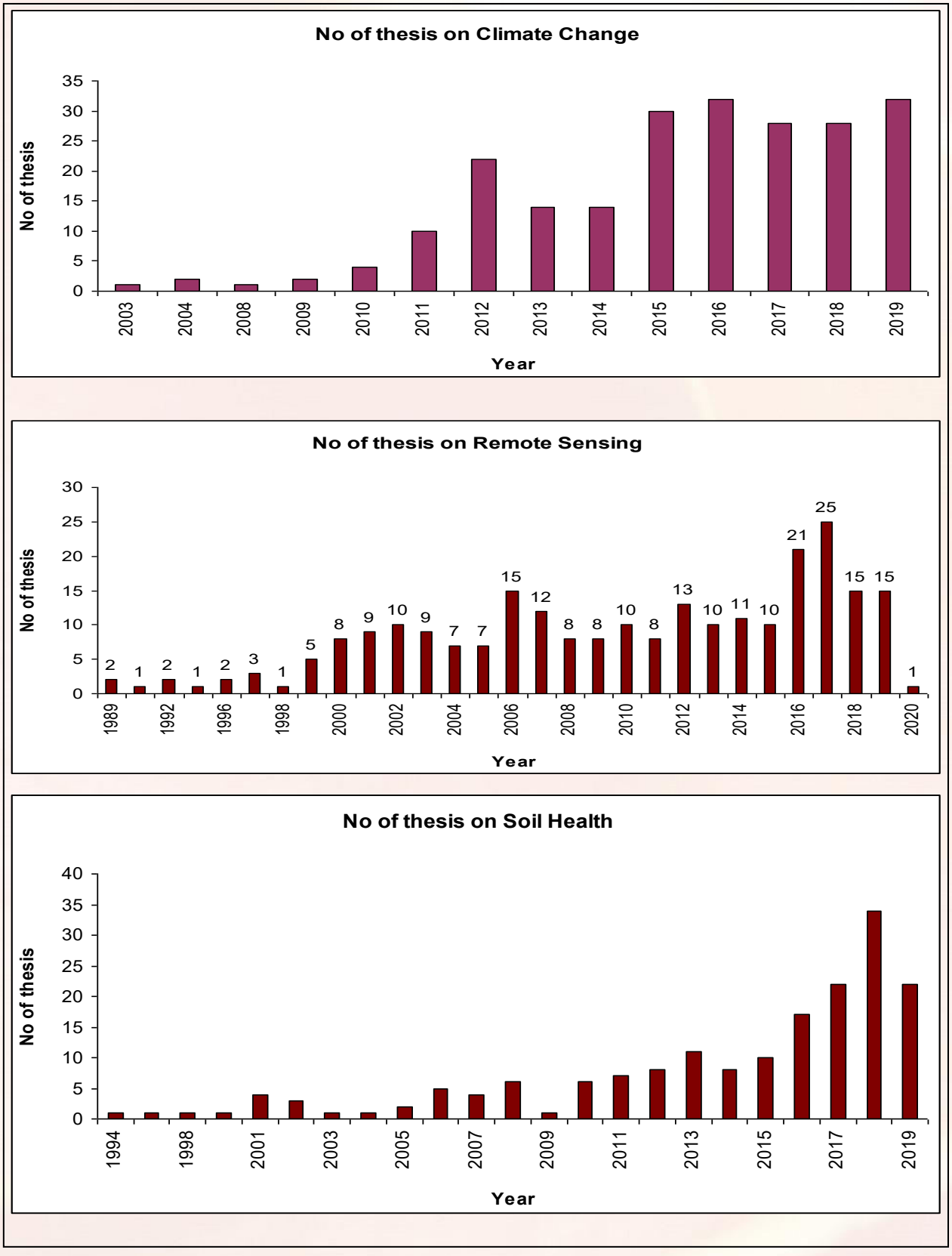
Case study a prominent keywords / technology in Krishikosh repository

Important Keywords along with its frequency in different years were extracted from the metadata of thesis titles available in Krishikosh repository (www.krishikosh.egranth.ac.in) using the keywords extraction tools. Frequency based keyword extraction technique are utilized to identified and quantify the prominent keywords / technology in which the Govt. of India emphasis with respect to time frame. The prominent keywords / technology with its numbers of studies (utilizing the metadata of thesis titles available in this repository) are presented in table 4 (listed few only). Based on this analysis, it indicates the numbers of research studies on Prominent keywords / technology for which Govt. of India emphasis are increasing with time especially in M.Sc. and Ph.D. thesis program in various NARES organizations.

Table 4: The prominent keywords / technology with its numbers of studies

Keywords / technology	Occurrence of Keywords in the theses title
Climate change	271
Remote-sensing	249
Soil health	177
Water quality	169
Ground water	138
Foot and mouth diseases	90
Kisan credit	45
Market integration	23
Precision farming	19
Soil Health Cards	18
eNAM	13
Pradhan Mantri Fasal Bima Yojana (PMFBY)	7
Image processing	7
Data mining	6
Sensors	5
Blockchain	2
Artificial Intelligence	2

The frequency based important keywords in different years are presented in Fig. 6



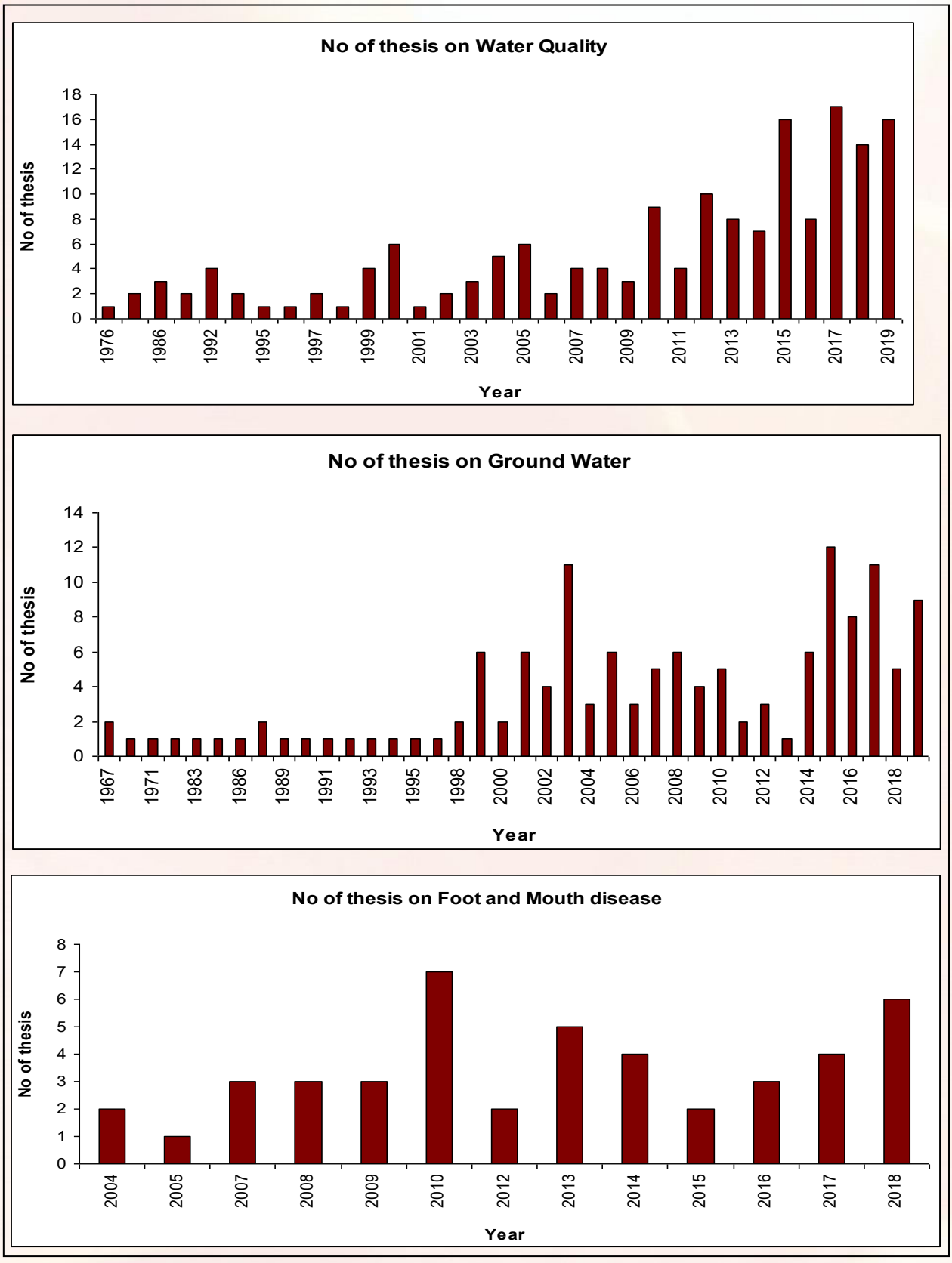


Fig. 6 : Frequency based important keywords in different years available in Krishikosh

To study the adoption of various keywords in research area using the Bass diffusion model. This model assumes that a researcher can adopt the new keywords for its research works. The general theory behind the Bass model makes assertions of how information about a new keywords is accepted between individuals in a research group and how this affects their timing of adoption. It was assumed that some individuals decide to adopt an innovation independently of the actions of others; these individuals are dubbed innovators. Other individuals in the system are influenced to adopt a techniques or keywords when they observe that more and more people have already done so; these individuals are called imitators. Thus in Bass diffusion models, the coefficient of innovation (p), and coefficient of imitation (q) and maximum ceiling capacity / size (m) are major parameters needs to ne estimated. In this approach, non-linear least square estimation procedure were utilized for estimating the parameters of models (p, q and m) using SAS software 9.3. For various keywords / procedure / methods, obtained from the thesis available in Krishikosh repository with frequency in different years, various parameters were estimated for target keywords which are presented in Table 5.

Table 5: The p, q and m parameters for Bass models in different keywords

Keywords		Estimate	
Climatic change	Coefficient of innovation	p	0.00495
	Coefficient of imitation	q	0.1330
	Total size	m	393.7
Soil Health	Coefficient of innovation	p	0.0198
	Coefficient of imitation	q	0.3676
	Total size	m	309.7
Water Quality	Coefficient of innovation	p	0.0332
	Coefficient of imitation	q	0.1033
	Total size	m	349.3
Foot and Mouth Diseases	Coefficient of innovation	p	0.0116
	Coefficient of imitation	q	0.1783
	Total size	m	121.0

Using these parameters the forecast of adoption (%) and diffusion of various keywords / techniques were presented in Table 6.

Table 6: observed and forecast (cumulative) along-with % of adoptions of target keywords

Keywords	Year	Observed (Cumulative Frequency)	Forecast Cumulative Frequency)	% of adoptions
Remote Sensing	1989	2	2	0.528
	1990	3	4	1.127
	1992	5	7	1.806
	1995	6	10	2.574
	1996	8	14	3.441
	1997	11	17	4.418
	1998	12	22	5.514
	1999	17	27	6.743
	2000	25	32	8.114
	2001	35	38	9.639
	2002	46	45	11.329
	2003	55	52	13.192
	2004	62	60	15.237
	2005	71	69	17.468
	2006	86	78	19.889
	2007	99	89	22.499
	2008	107	100	25.292
	2009	116	111	28.260
	2010	126	124	31.390
	2011	135	137	34.661
	2012	148	150	38.052
	2013	159	164	41.535
	2014	170	178	45.080
	2015	180	192	48.654
	2016	200	206	52.222
	2017	227	220	55.752
	2018	242	233	59.212
	2019		246	62.571
	2020		259	65.804
	2021		271	68.889
	2022		283	71.808

	2023		294	74.549
	2024		304	77.105
	2025		313	79.471
	2026		321	81.649
	2027		329	83.640
	2028		336	85.453
	2029		343	87.094
	2030		349	88.574
	2031		354	89.903
	2032		359	91.092
Water Quality	2012	10	12	3.435
	2014	25	25	7.093
	2015	41	38	10.960
	2016	50	52	15.014
	2017	68	67	19.229
	2018	82	82	23.574
	2019	98	98	28.014
	2020		114	32.507
	2021		129	37.014
	2022		145	41.492
	2023		160	45.901
	2024		175	50.202
	2025		190	54.362
	2026		204	58.349
	2027		217	62.141
	2028		230	65.719
	2029		241	69.069
	2030		252	72.185
	2031		262	75.064
	2032		271	77.709
	2033		280	80.125
	2034		288	82.322
	2035		294	84.310
	2036		301	86.101
	2037		306	87.710

	2038		311	89.149
	2039		316	90.433
	2040		320	91.576
Soil Health	2013	12	7	2.361
	2014	20	17	5.643
	2015	30	31	10.095
	2016	47	49	15.938
	2017	70	72	23.283
	2018	104	99	32.031
	2019	128	129	41.807
	2020		161	51.981
	2021		191	61.816
	2022		219	70.666
	2023		242	78.133
	2024		260	84.096
	2025		275	88.654
	2026		285	92.022

The prominent Keywords along-with their frequencies in different years were extracted from the metadata of thesis titles available in Krishikosh repository using the natural language processing technique and identified and quantify the prominent keywords / technology in which the Govt. of India emphasis with respect to time frame. For foresight the adoptions of techniques / technology through bass diffusion models which is an effective forecasting tool for innovation diffusion. The rate of diffusion of this new technology on the innovativeness (p), peer recommendation (q) and maximum ceiling / size (m) were estimated using non-linear procedure. The adoptions behavior of various keywords generated through the keywords has been analyzed using Bass diffusion models, this indicates there is good agreement between observed and forecast cumulative frequencies. The forecast for adoption of keywords (90 percent) with the time lines for major keywords such as Climatic change, Soil Health, Water Quality, Foot and Mouth Diseases, Ground water and High Yield Varieties (HYVs) were range from 2025 to 2040. Thus keywords were obtained through bibliometric analysis from Krishikosh repository to foresight the adoptions of techniques / technology through bass diffusion models which is an effective forecasting tool for innovation diffusion.

Objective 4 & 5: ***To sensitize the stakeholders through capacity building programmes / workshops knowledge management in the networked digital environment and introduce new knowledge delivery models like MOOCs. To work on Altmetrics which are complementary metrics to traditional and citation-based metrics and sensitize the stakeholders through capacity building workshops.***

TRAINING PROGRAMMES/WORKSHOPS

PJTSAU		
PROGRAMME	**DATE**	**PARTICIPANTS**
i. MOOC on "Information Handling Skills for Teaching, Learning and Research"	26-08-2020 to 16-09-2020	1118
ii. Live session on "Information Handling Skills for Teaching, Learning and Research" as part of MOOC course.	14-09-2020	200
iii. Virtual sensitization programme on Knowledge Management in the Networked Digital Environment for MPKV, Rahuri & MAFSU, Nagpur	30-12-2020	150
iv. MOOC on "Information Handling Skills for Teaching, Learning and Research"	01-03-2021 to 21-03-2021	1282
v. Live sessions under "Information Handling Skills for Teaching, Learning and Research" as part of MOOC course.	05-03-2021, 12-03-2021 & 19-03-2021	100+ each session
TANUVAS		
i. Online Training on "Use of Scopus in Research Workflow"	23-07-2020	242
ii. Virtual Sensitization Programme on Knowledge Management in the Networked Digital Environment for the	27-08-2020	395

research scholars and faculty of Kerala Veterinary and Animal Sciences University (KVASU) and TANUVAS		
iii. Online Training Programme on Using Urkund Plagiarism Detection Software System	18-09-2020	150
iv. International Virtual Symposium on Digital Scholarship	14-10-2020	662
v. Virtual Sensitization programme on Knowledge Management in the Networked Digital Environment for the benefit of research scholars and faculty of ANGRAU, Guntur and Dr.YSR Horticultural University, Venkataramanagudem, A.P.	17-10-2020	583
vi. Virtual Sensitization programme on Knowledge Management in the Networked Digital Environment for the benefit of research scholars and faculty of Tamil Nadu Agricultural University, Coimbatore	24-10-2020	212
vii. Virtual Sensitization programme on Knowledge Management in the Networked Digital Environment for the benefit of research scholars and faculty of Tamil Nadu	10-11-2020	528

Agricultural University, Coimbatore		
IARI		
i. Virtual hands-on Programme on "E-resources in Agricultural Research	30-01-2021	181
ii. Sensitization and National Training program on "Digital Library Frame Work for Strengthening Agricultural Knowledge" at CCS Haryana Agricultural University, Hisar.	17-02-2021 to 19-02-2021	243
IVRI		
i. Sensitization Workshop cum Webinar on Agricultural Knowledge Management in the Networked Digital Environment, MPUAT, Udaipur, Rajasthan through online	15-07-2020	715
ii. Sensitization Workshop cum Webinar on Agricultural Knowledge Management in the Networked Digital Environment, Banda University ofAgriculture & Technology, UP through online	24-07-2020	636
iii. Sensitization Workshop cum Webinar on Agricultural Knowledge Management in the Networked Digital Environment, BASU, Patna Through Online	05-08-2020	212
iv. Sensitization workshop cum webinar on CeRA and	08-09-2020	110

other e-Resources, IVRI, Izatnagar Through Online		
v. Virtual Sensitization Programme on Networked Digital Environment, ANDUAT, Ayodhya Through Online	29-10-2020	387
vi. Virtual Sensitization Programme on Networked Digital Environment, AAU, Jorhat (Assam) Through Online	03-12-2020	368
vii. Online National Level Training Programme on "Open Source Library Management System (KOHA) & Agricultural Knowledge Management"	22-03-2021 to 22-03-2021	103

i. A Sensitization Workshop cum Webinar on Agricultural Knowledge Management in the Networked Digital Environment at **Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur, Rajasthan through online by ICAR-Indian Veterinary Research Institute, Izatnagar**, Uttar Pradesh on 15-07-2020. 715 participants took part in the workshop and got benefitted.

ii. A Sensitization Workshop cum Webinar on Agricultural Knowledge Management in the Networked Digital Environment at **Banda University of Agriculture & Technology, UP through online by ICAR-Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh** on 24-07-2020. 636 participants took part in the workshop and got benefitted.

iii. A Sensitization Workshop cum Webinar on Agricultural Knowledge Management in the Networked Digital Environment at **BASU, Patna through online by ICAR-Indian Veterinary Research Institute, Izatnagar, Uttar** Pradesh on 05-08-2020.212 participants took part in the workshop and got benefitted.

iv. A Virtual Sensitization Programme on Knowledge Management in the Networked Digital Environment for the research scholars and faculty of Kerala Veterinary and **Animal Sciences University (KVASU) and Tamil Nadu Veterinary and Animal**

Sciences University, Chennai, Tamil Nadu on **27-08-2020. 395** participants took part in the programme and got benefitted.

v. A Sensitization workshop cum webinar on CeRA and other e-Resources was conducted online by **ICAR-Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh** on **08-09-2020. 110** participants took part in the workshop and got benefitted.

vi. A International Virtual Symposium on Digital Scholarship was conducted by **Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu** on **14-10-2020. 662** participants took part in the symposium and got benefitted.

vii. A Virtual Sensitization programme on Knowledge Management in the Networked Digital Environment for the benefit of research scholars and faculty of ANGRAU, Guntur and Dr.YSR Horticultural University, Venkataramanagudem, A.P. by **Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu** on **17-10-2020. 583** participants took part in the programme and got benefitted.

viii. A Virtual Sensitization programme on Knowledge Management in the Networked Digital Environment for the benefit of research scholars and faculty of Tamil Nadu Agricultural University, Coimbatore by **Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu** on **24-10-2020. 212** participants took part in the programme and got benefitted.

ix. A Virtual Sensitization Programme on Networked Digital Environment, Acharya Narendra Deva University of Agriculture and Technology, ANDUAT, Ayodhya Through Online by **ICAR-Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh** on **29-10-2020. 387** participants took part in the programme and got benefitted.

x. A Virtual Sensitization programme on Knowledge Management in the Networked Digital Environment for the benefit of research scholars and faculty of Tamil Nadu Agricultural University, Coimbatore by **Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu** on **10-11-2020. 528** participants took part in the programme and got benefitted.

xi. A Virtual Sensitization Programme on Networked Digital Environment, Assam Agricultural University, Jorhat (Assam) through Online by **ICAR-Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh** on **03-12-2020. 368** participants took part in the programme and got benefitted.

xii. A Virtual sensitization programme on Knowledge Management in the Networked Digital Environment for Mahatma Phule Krishi Vidyapeeth, Rahuri & Maharashtra Animal and Fishery Sciences University, Nagpur by **Professor Jayashankar Telangana State Agricultural University, Hyderabad, Telangana** on **30-12-2020. 150** participants took part in the programme and got benefitted.

xiii. A Virtual hands-on Programme on "E-resources in Agricultural Research by **ICAR-Indian Agricultural Research Institute, New Delhi** on **30-01-2021. 181** participants took part in the programme and got benefitted.

xiv. A Sensitization and National Training Programme on "Digital Library Frame Work for Strengthening Agricultural Knowledge" at CCS Haryana Agricultural University, Hisar by **Indian Agricultural Research Institute, New Delhi** from **17-02-2021** to **19-02-2021. 243** participants took part in the programme and got benefitted.

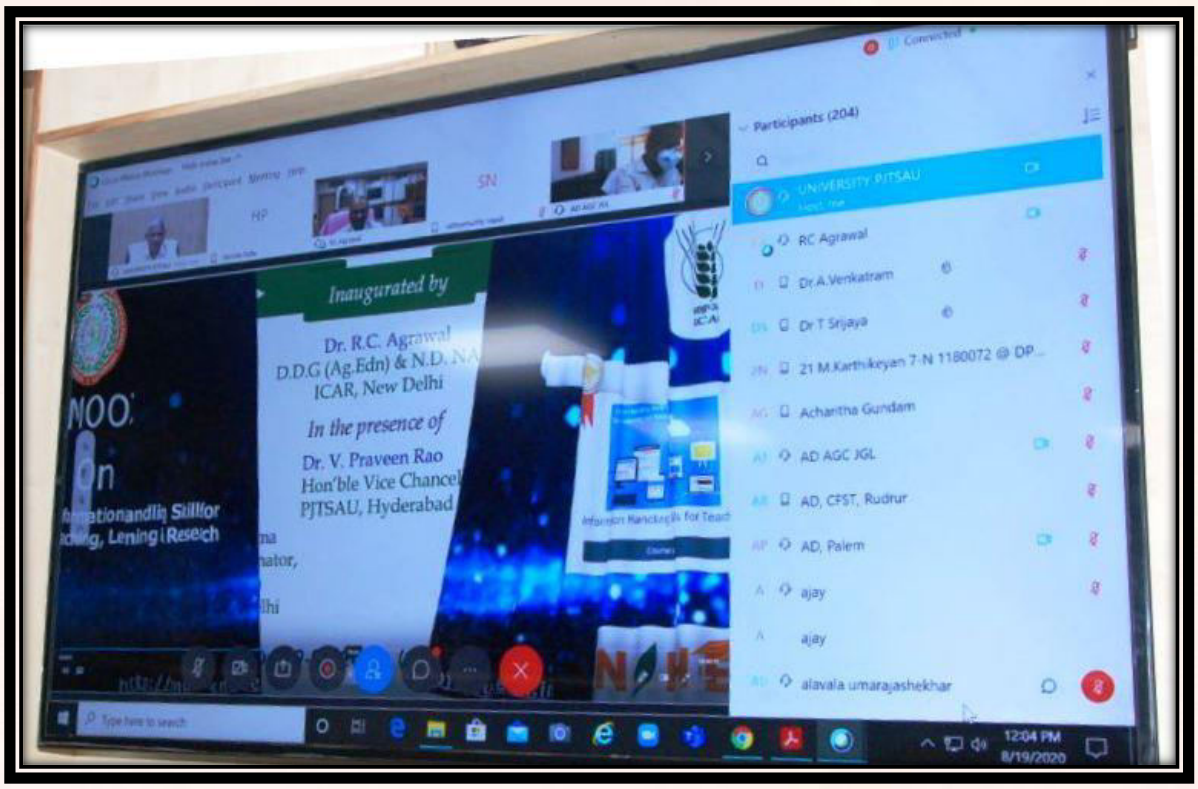
xv. A Online National Level Training Programme on "Open Source Library Management System (KOHA) & Agricultural Knowledge Management" by **ICAR-Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh** from **22-03-2021** to **22-03-2021. 103** participants took part in the programme and got benefitted.

MOOC ON "INFORMATION HANDLING SKILLS FOR TEACHING, LEARNING AND RESEARCH" PHASE-I

One of the main objectives of the project is to organize a MOOC Course meant for faculty of SAUs & students on "Information Handling Skills for Teaching, Learning and Research". To fulfill this objective, Professor Jayashankar Telangana State Agricultural University, Hyderabad under ICAR-NAHEP (NKMC4AER) had organized and conducted a **MOOC on "Information Handling Skills for Teaching, Learning and Research"** from **August 26, 2020 to September 16, 2020.** The video content was recorded in collaboration with ICAR-NAARM, Hyderabad. To this extent, PJTSAU has organized the launch programme of the MOOC on 19.08.2020. Dr. R.C Agrawal, National Director, ICAR-NAHEP & D.D.G (Edn), New Delhi, had launched MOOC virtually in the presence of 220 people across the country.

The programme began with the invocation songs of ICAR and PJTSAU. Mr. N. P.Ravi Kumar, Principal Investigator, ICAR-NAHEP (IG) for NKMC4AER had welcomed the Chief Guests, Respected Dignitaries, Invitees and Resource Persons. Dr.V.Praveen Rao, the Hon'ble Vice-Chancellor, PJTSAU, Hyderabad acted as the chairman

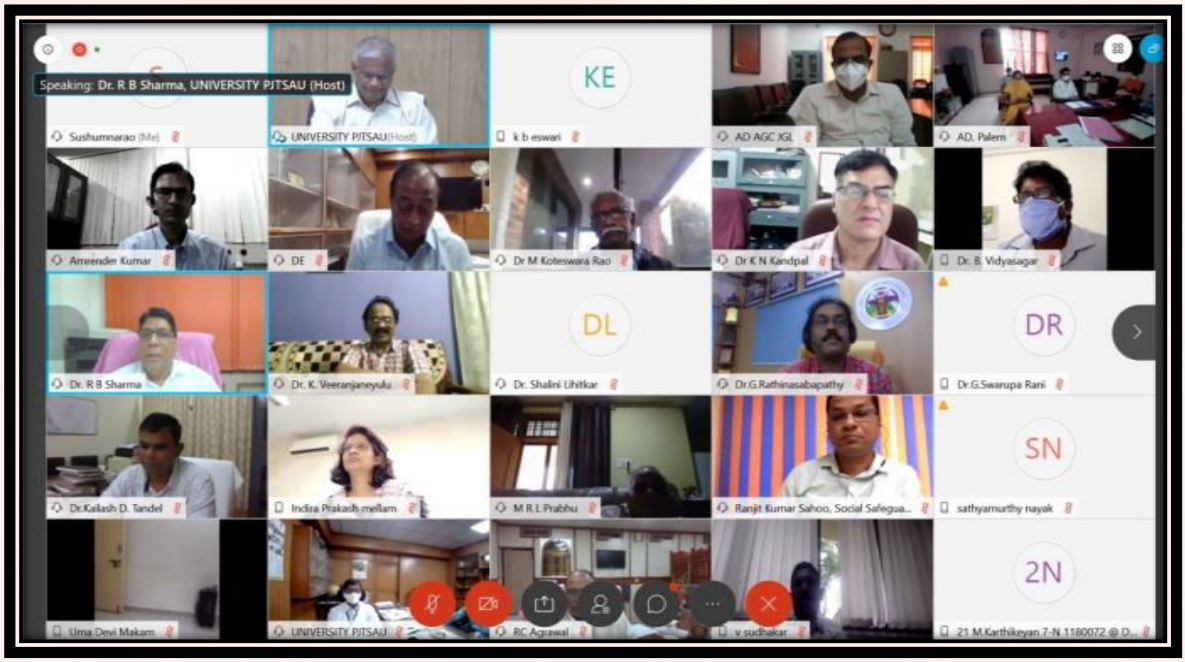
for the programme and piloted the programme. Dr. R.B. Sharma, National Coordinator, ICAR-NAHEP(IG), New Delhi briefed about the benefits of MOOCs, demonstrated its objectives and detailed about course content and outcome of the Massive Open Online Course on " Information Handling Skills for Teaching, Learning and Research". Dr. Amrender Kumar (CC Principal Investigator), Principal Scientist (Agril. Statistics), Agricultural Knowledge Management Unit, ICAR-IARI, New Delhi and Dr. G. Rathinasabapathy (CC Principal Investigator) University Librarian, TANUVAS, Chennai, Tamil Nadu have addressed the audience and expressed their views on the MOOC course.



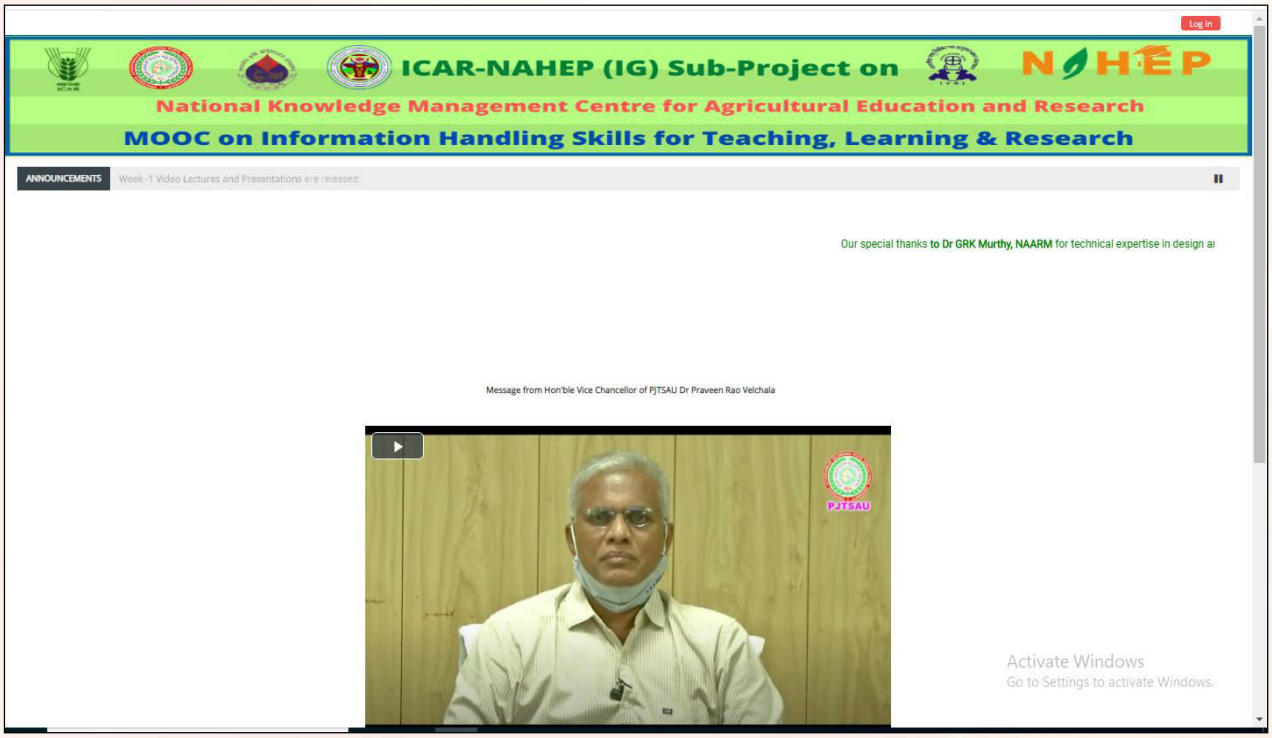
Virtual launch of MOOC on "Information Handling Skills for Teaching, Learning and Research", held at PJTSAU, Hyderabad under NKMC4AER, ICAR-NAHEP on 19.08.2020

Dr. V. Praveen Rao, the Hon'ble Vice Chancellor, PJTSAU discoursed about the role of e-learning in agricultural education and shared his valuable insights on its pros & cons. The Hon'ble Vice Chancellor, PJTSAU also spoke about the evolvement of libraries and enlightened their importance in agricultural education. Dr. R.C Agrawal, National Director, ICAR-NAHEP & D.D.G (Edn), in his address remarked on the importance of knowledge management, online education and enumerated about advancement of libraries and their functions. Citing about new National education Policy 2020, the National Director had stated that there is a need for integration of technology with education sector in order to

create resilient education system. Further, added that the existing agricultural education system in India already meets 80% of the new education policy objectives and enumerated that the launched MOOC course plays key role in moving towards New Education Policy. The dignitary had appreciated the agriculture faculty for quickly adopting to the new mode of online education system. Dr. G. Rathinasabapathy (CC Principal Investigator) delivered vote of thanks and thanked everybody for joining the online launch programme.



Virtual launch of MOOC on "Information Handling Skills for Teaching, Learning and Research", Professor Jayashankar Telangana State Agricultural University, Hyderabad under NKMC4AER, ICAR-NAHEP on 19.08.2020



MOOC website on "Information Handling Skills for Teaching, Learning and Research", Professor Jayashankar Telangana State Agricultural University, Hyderabad under NKMC4AER, ICAR-NAHEP

The MOOC course on "Information Handling Skills for Teaching, Learning and Research" received huge response from all over India within short duration with a total of 1118 participants registering for the course. The participants were from 22 different States and 2 Union territories of India (Fig. 7).

State	No. of Participants
Telangana	491
Andhra Pradesh	147
Karnataka	110
Maharashtra	95
Tamil Nadu	76
Kerala	29
Odisha	28
Haryana	24
Tripura	20
Uttar Pradesh	17
Punjab	13
Rajasthan	10
Bihar	9
West Bengal	9
Gujarat	8
Madhya Pradesh	8

Chhattisgarh	6
Assam	4
Jammu and Kashmir	4
New Delhi	4
Uttarakhand	2
Himachal Pradesh	1
Ladakh	1
Nagaland	1
Total	1118

Table 7: Participants (State-wise)

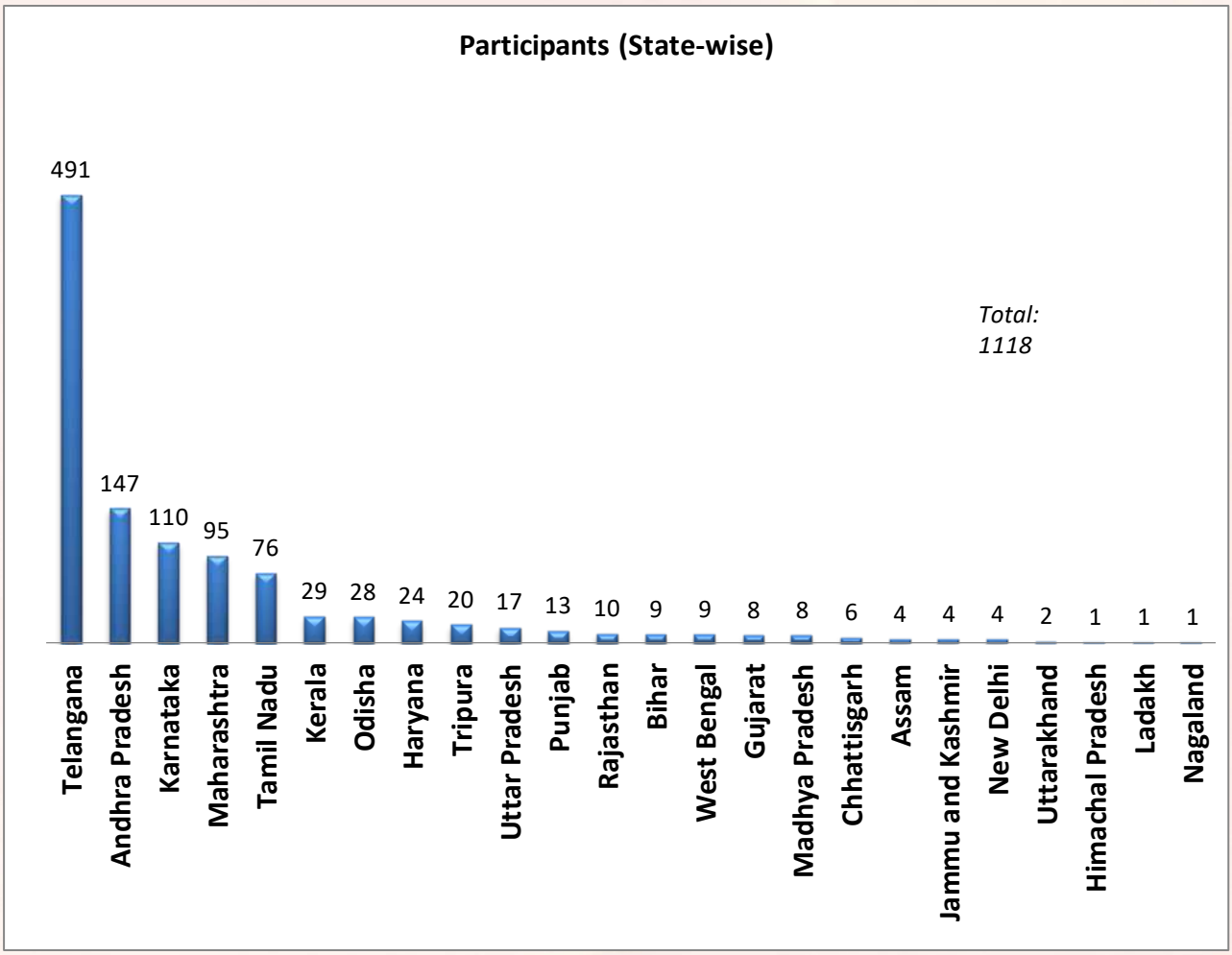


Fig. 7: Participants (State-wise)

Among 1118 participants, 515 were faculty members, 71 library professionals, 128 research scholars, 371 students and 33 people from various professions (Fig. 8). About 488 participants were women, which translates to 44% of the total number of participants (Fig. 9).

Designation	No. of Participants
Faculty/Scientists	515
LIB Prof	71
Research Scholar	128
Student	371
Others	33
Total	**1118**

Table 8: Participants (Designation-wise)

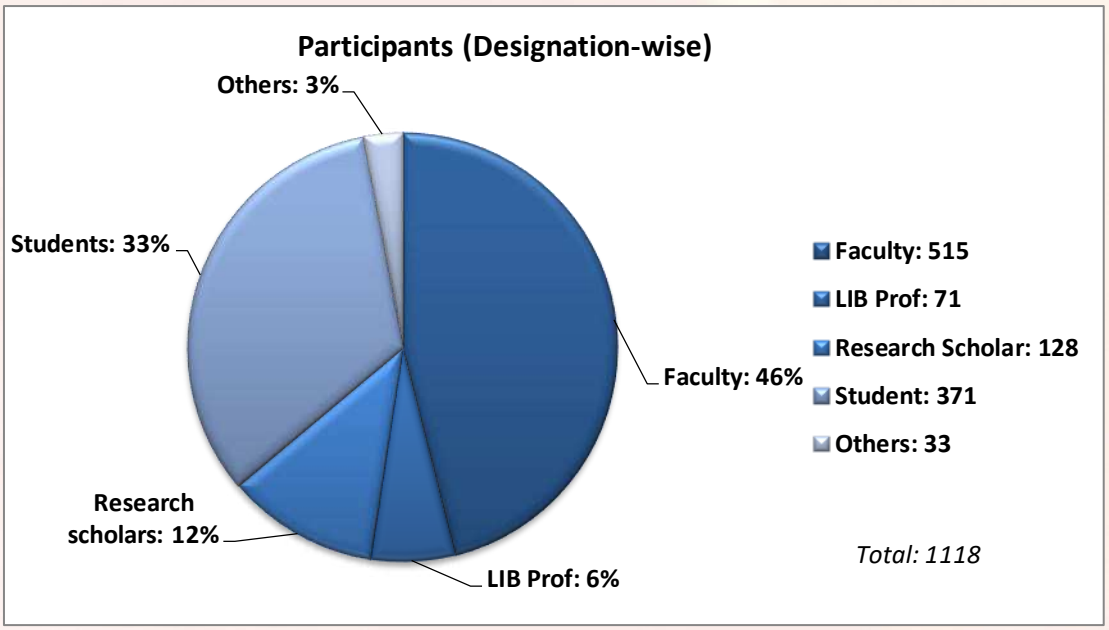


Fig. 8: Participants (Designation-wise)

Social Category-wise, 42% of the participants were from SC category, 25% from ST, 10% from OBC and 23% from unreserved category (Fig. 10 & 11). Out of total 1118 participants, 940 participants were from ICAR recognized Agricultural Universities, while 178 participants were from other Universities/Institutions/Organizations (Fig. 12). The participants from 44 State Agricultural Universities belonged to ICAR recognized Agricultural Universities, 3 Central Agricultural Universities and 4 Deemed to-be Universities.

Gender	No. of Participants
Female	488
Male	630
Total	**1118**

Table 9: Participants (Gender-wise)

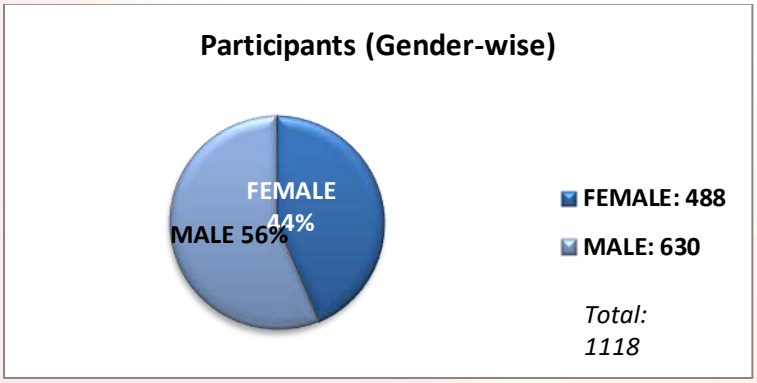


Fig. 9: Participants (Gender-wise)

Social Category	No. of Participants
SC	437
ST	281
OBC	113
UR	251
TOTAL	**1118**

Table 10: Participants (Social-category-wise)

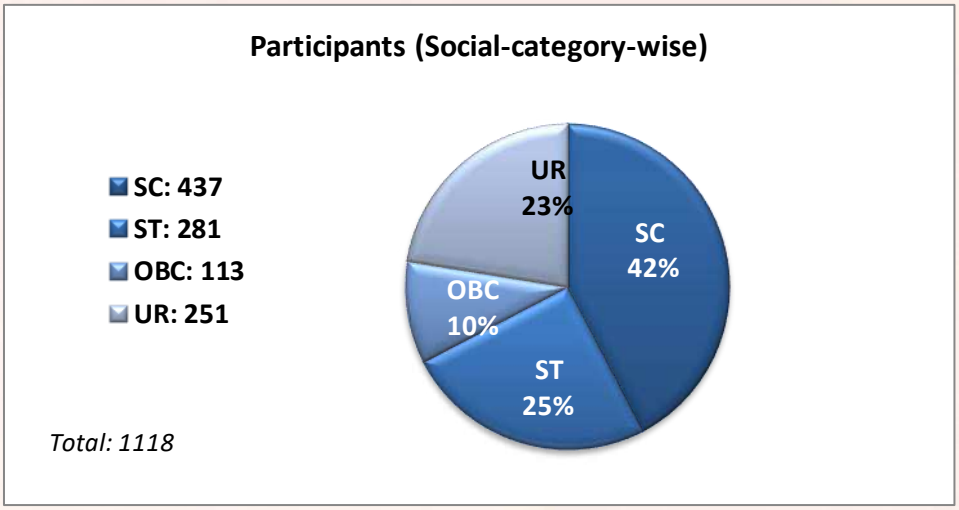


Fig. 10: Participants (Social-category-wise)

Social Category	Designation	No. of Participants
OBC	Faculty	180
	LIB Prof	23
	Research scholar	58
	Student	197
	Others	15

SC	Faculty	84
	LIB Prof	8
	Research scholar	16
	Student	40
	Others	3
ST	Faculty	34
	LIB Prof	4
	Research scholar	10
	Student	18
	Others	3
UR	Faculty	216
	LIB Prof	36
	Research scholar	44
	Student	118
	Others	11
	TOTAL	**1118**

Table 11: Participants (Social-category and Designation-wise)

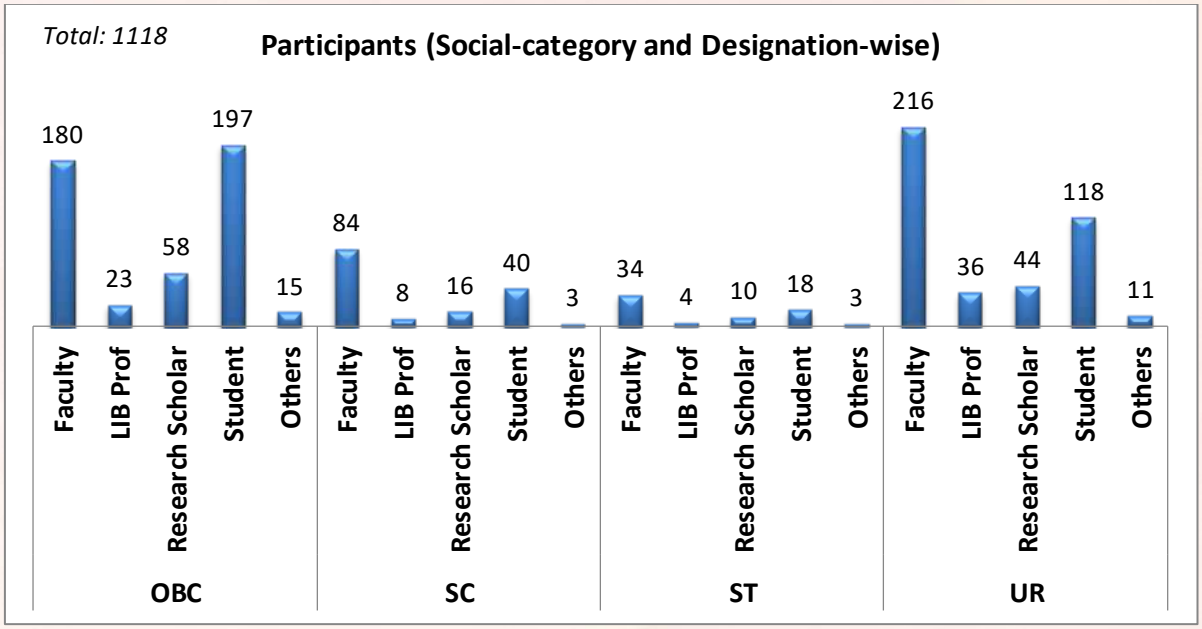


Fig. 11: Participants (Social-category and Designation-wise)

University	No. of Participants
PJTSAU, Hyderabad	425
ANGRAU, Guntur	72
TNAU, Coimbatore	54
UAS, Dharwad	52
Dr. PDKV, Akola	50

UHS, Bagalkote	30
Dr. YSRHU, Venkataramannagudem	24
MPKV, Rahuri	24
SKLTSHU, Hyerabad	24
UAS, Raichur	20
CCSHAU, Hisar	19
KAU, Thiruvananthapuram	13
VNMKV, Parbhani	10
UAS, Bangalore	9
OUAT, Bhubaneswar	8
TANUVAS, Chennai	8
BAU, Sabour	7
MAFSU, Nagpur	7
AAU, Assam	6
IGKV, Raipur	6
RVSKVV Gwalior	6
KAU, Trissur	5
AAU, Anand	4
JNKVV, Jabalpur	4
PAU, Ludhiana	4
CIFE, Mumbai	3
DBSKKV, Dapoli	3
ICAR - IARI	3
KVAFSU, Bidar	3
RLBCAU, Jhansi	3
SKUAST, Kashmir	3
UBKV, Coochbehar	3
AU, Kota	2
GBPUAT, Patnanagar	2
ICAR - IVRI	2
NAU, Gujarat	2
SDAU, Dantiwada	2
SKNAU, Jobner	2
SKRAU, Bikaner	2
SVVU, Tirupati	2
UAHS, Shimoga	2
ANDUA&T, Kumarganj	1
CAU, Imphal	1
CSAU, Kanpur	1
Dr. YSPUHF, Solan	1
ICAR - NDRI	1
PVNRTSVU, Hyderabad	1
RPCAU, Bihar	1

SHUATS, Prayagraj	1
SVPUA&T, UP	1
TNJFU, Nagapattinam	1
Others	178
Total	**1118**

Table 12: Participants (University-wise)

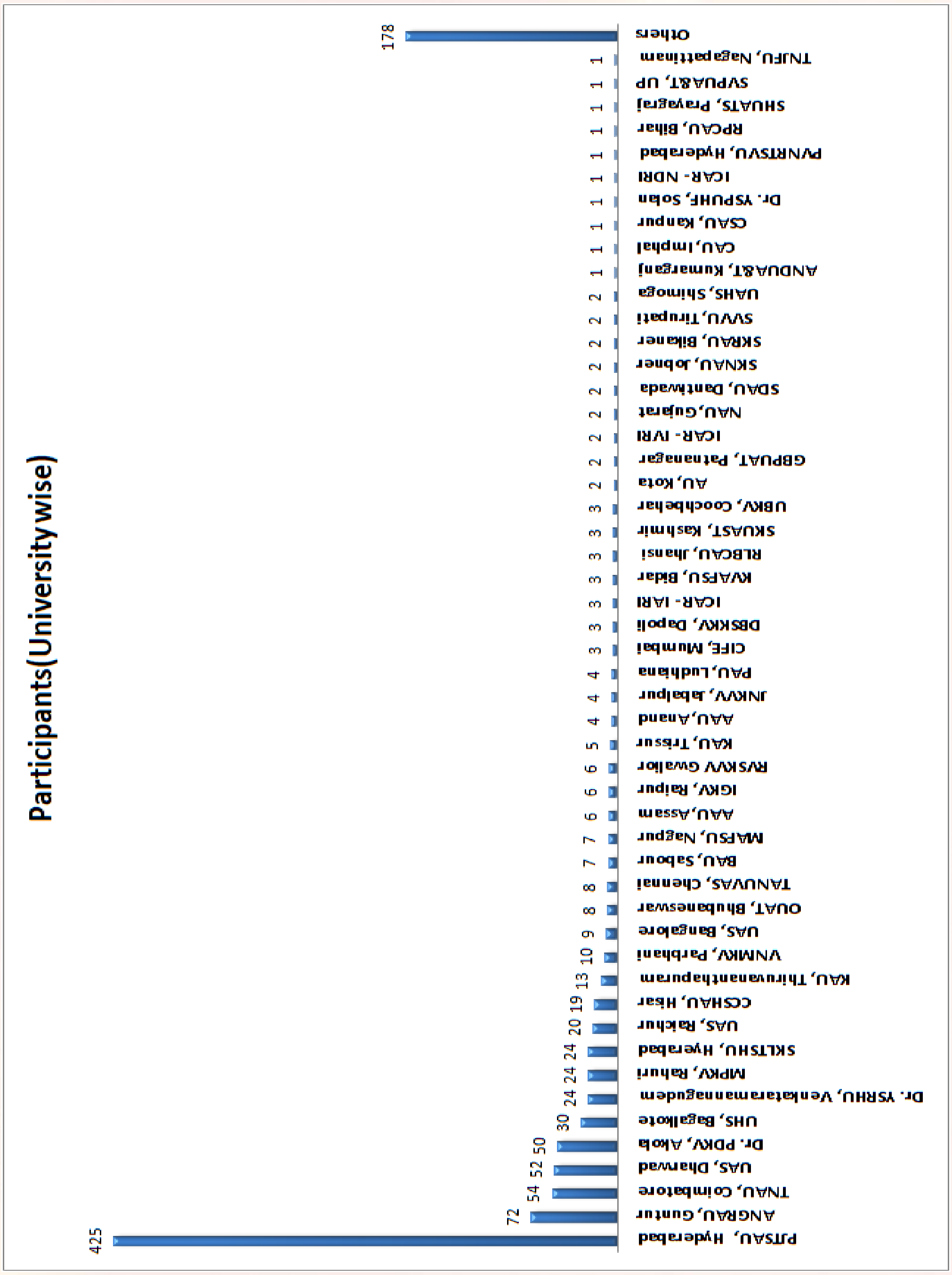


Fig. 12: Participants (University-wise)

Out of the total 1118 participants, 563 participants have successfully completed the course by attending the quizzes, final assessment and were awarded Certificate of Completion. Remaining participants i.e. 555 have received the Participation Certificates.

Type of Certificate	No. of Students
Certificate of Completion	563
Participation Certificate	555
Total	**1118**

Table 13: Details of the certificates issued to students

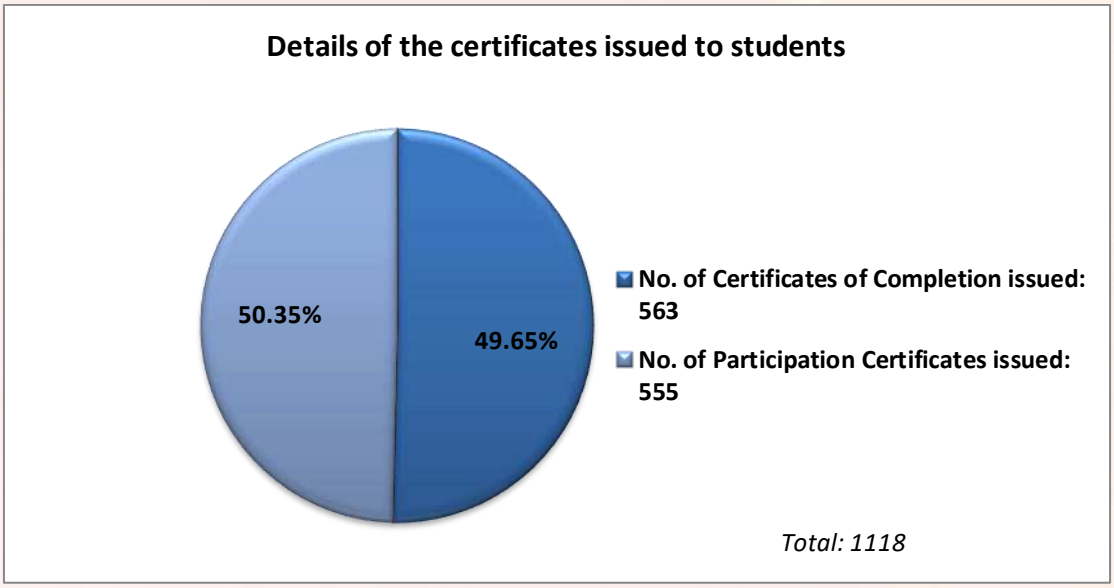


Fig. 13: Details of the certificates issued to students

Around 692 participants attended Week-1 and Week- 2 Quizzes, 580 participants attended Week-3 quiz while 563 participants took up final assessment quiz. Figures 14-18 depict the details of quizzes and grades obtained by the participants in different quizzes.

1. In Week-1 quiz, 519 participants scored grades between 95-100, 346 participants scored grades between 80-95 and 173 scored grades below 80.
2. In Week-2 quiz, 472 participants scored grades between 95-100, 315 participants scored grades between 80-95 and 157 scored grades below 80.
3. In Week-3 quiz, 435 participants scored grades between 95-100, 290 participants scored grades between 80-95 and 145 participants scored grades below 80.
4. In the Final assessment, 423 participants scored grades between 95-100, 282 participants scored grades between 80-95 and 141 participants scored grades below 80.

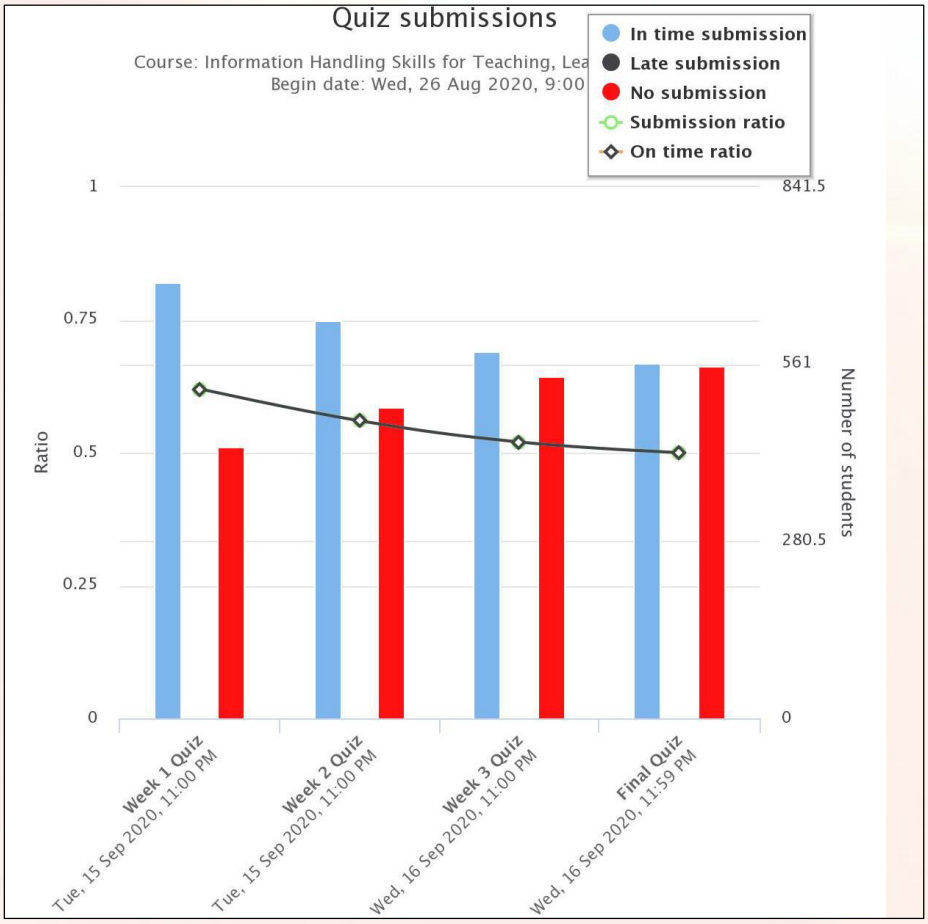


Fig. 14: Participants' quiz submissions (graph from MOODLE analytics)

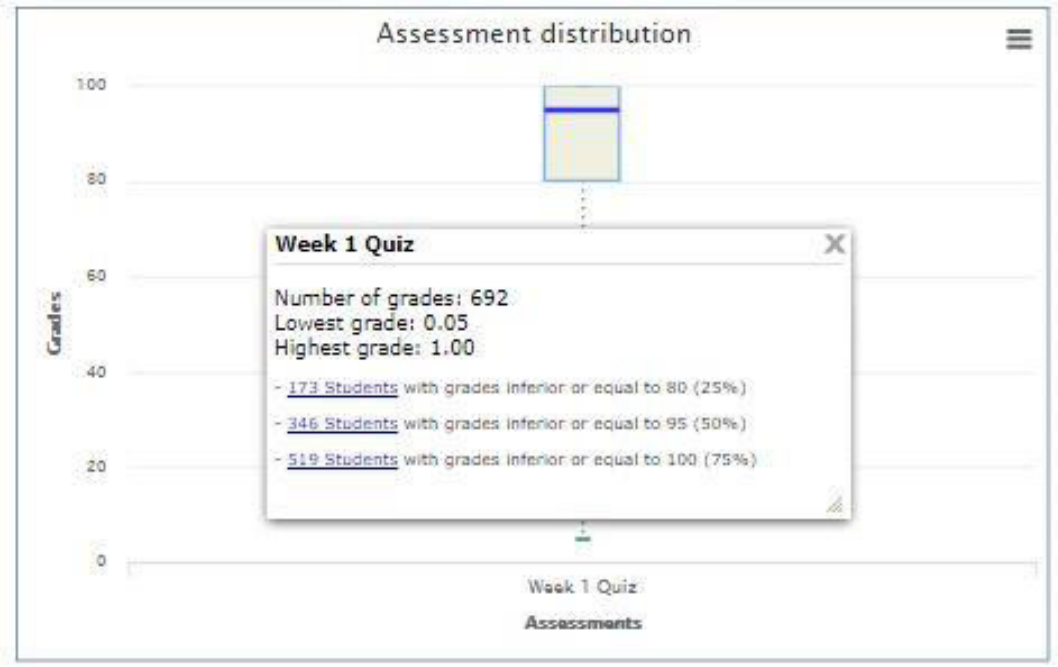


Fig. 15: Participants' WEEK-1 quiz grades (graph from MOODLE analytics)

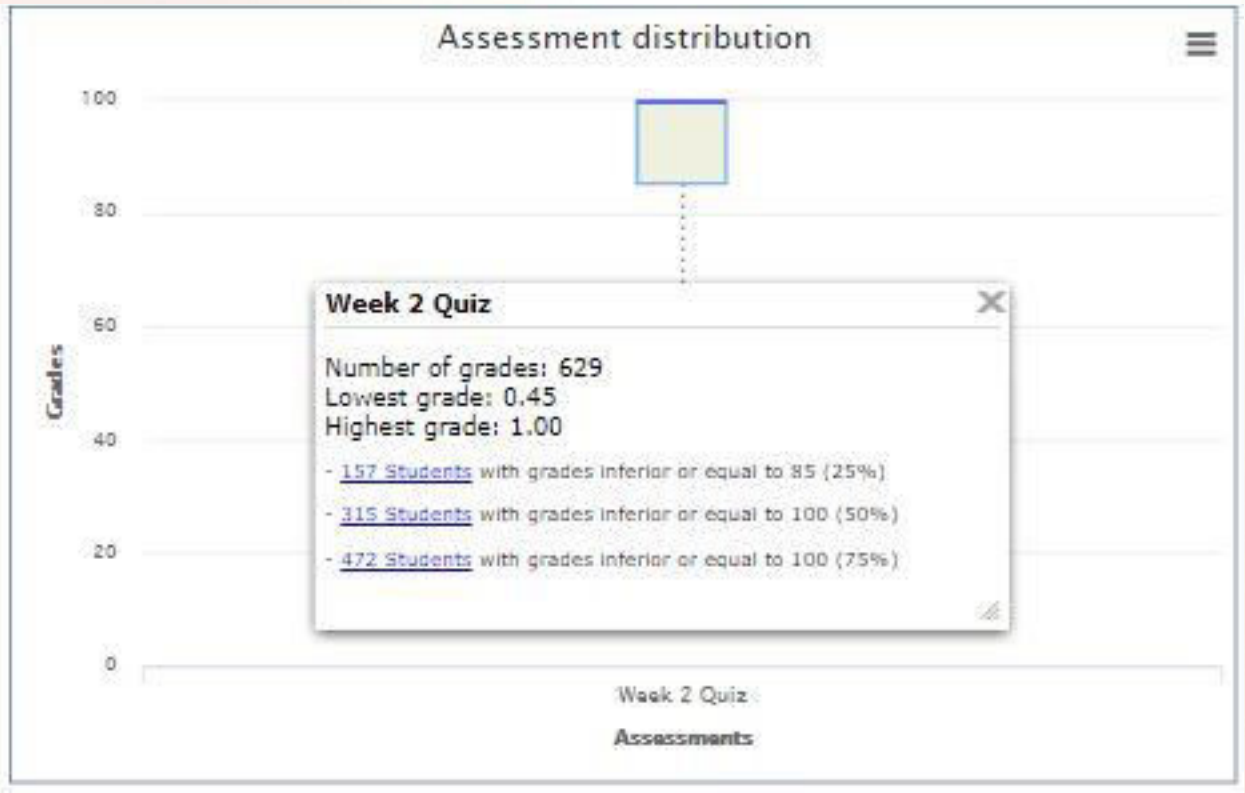


Fig. 16: Participants' WEEK-2 quiz grades (graph from MOODLE analytics)

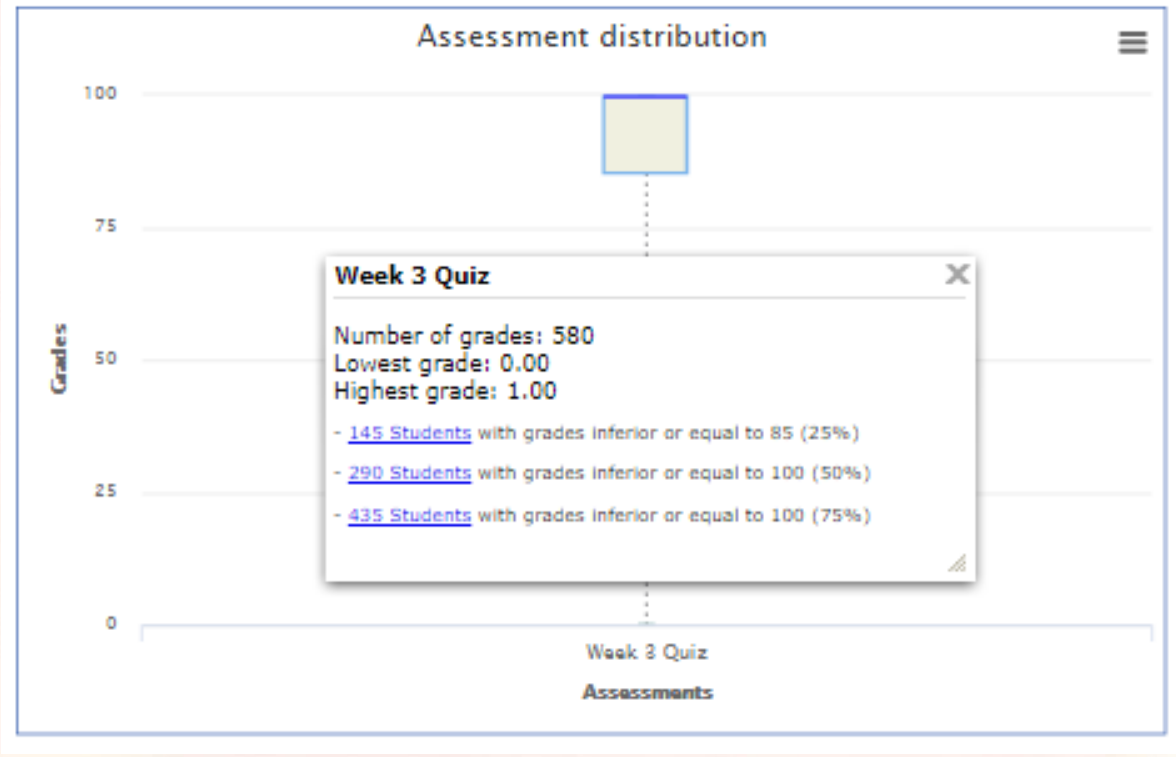


Fig. 17: Participants' WEEK-3 quiz grades (graph from MOODLE analytics)

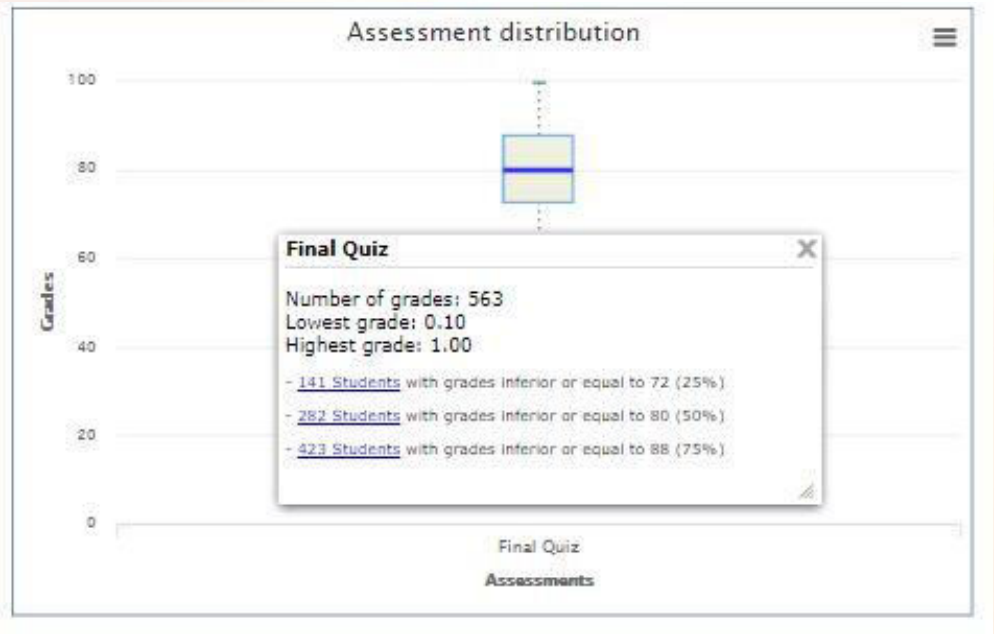


Fig. 18: Participants' final assessment grades (graph from MOODLE analytics)

Fig. 19 below depicts the Participants' access details to the discussions and Q&A forum. Most of the participants accessed the resources viz. videos, downloadable presentations for further reference while the details of distribution of access to resources can be seen in Figure 20 & 21.

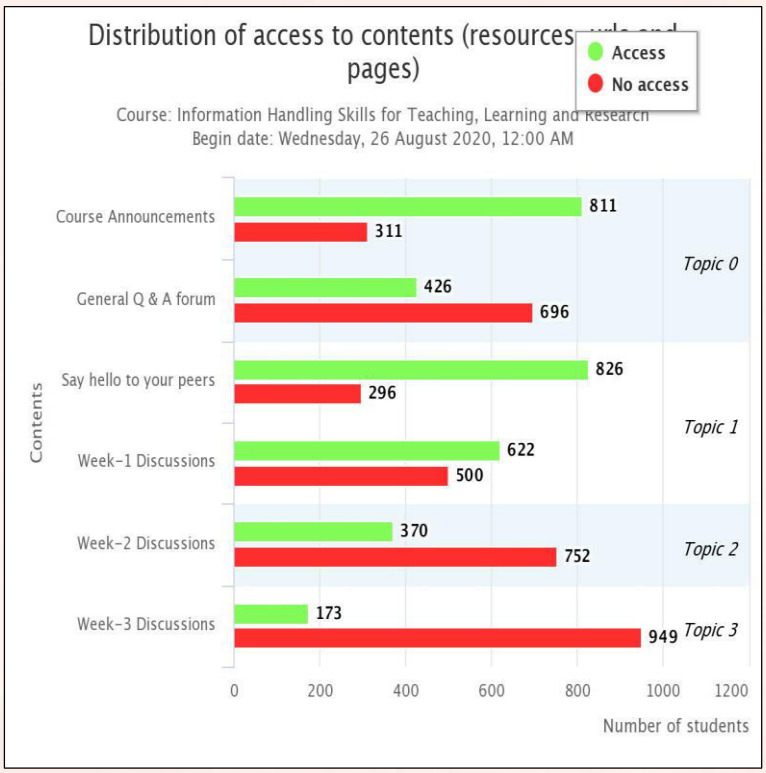


Fig. 19: Participants' access to discussion forums (graph from MOODLE analytics

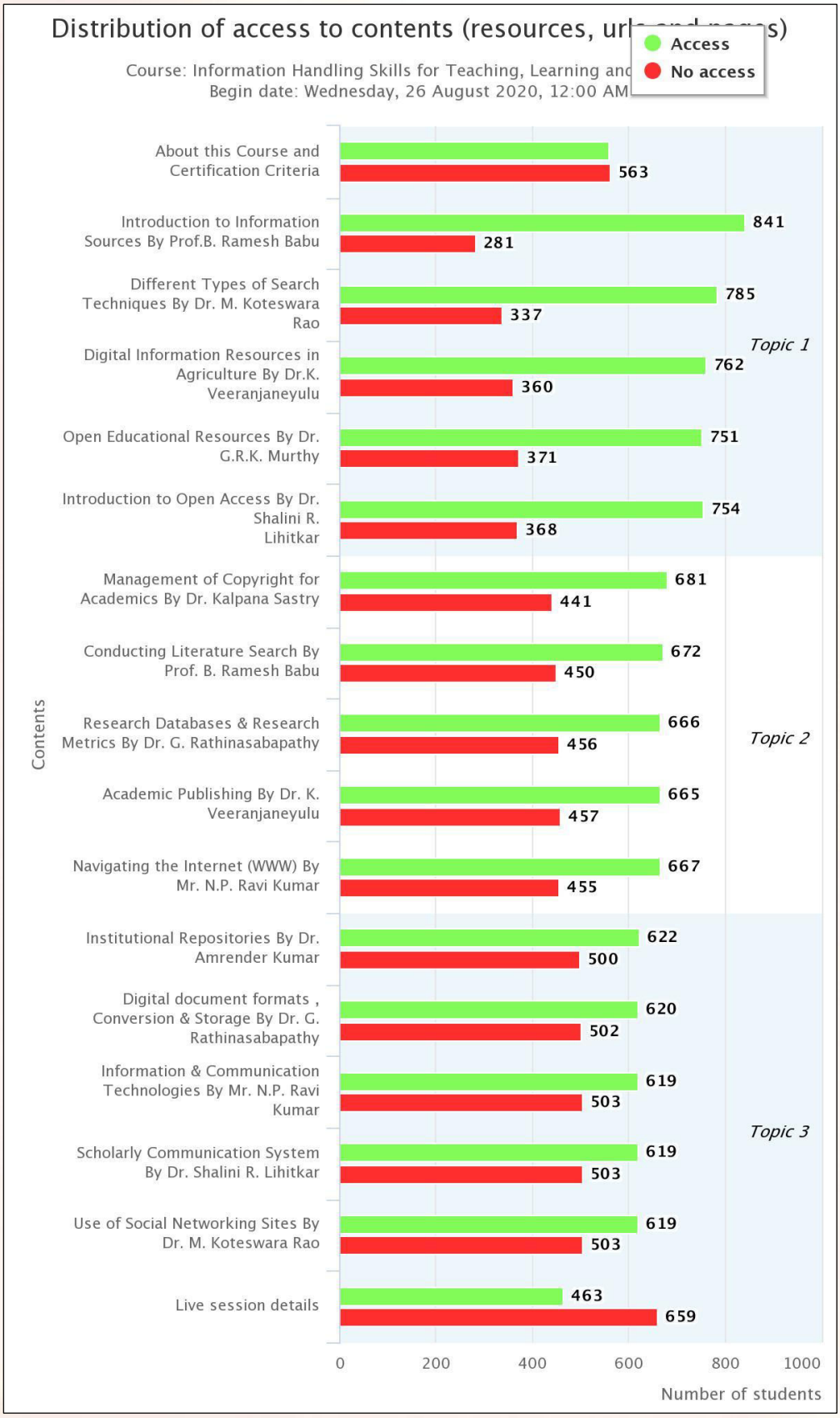


Fig. 20: Participants' access to resources resource persons wise (graph from MOODLE analytics)

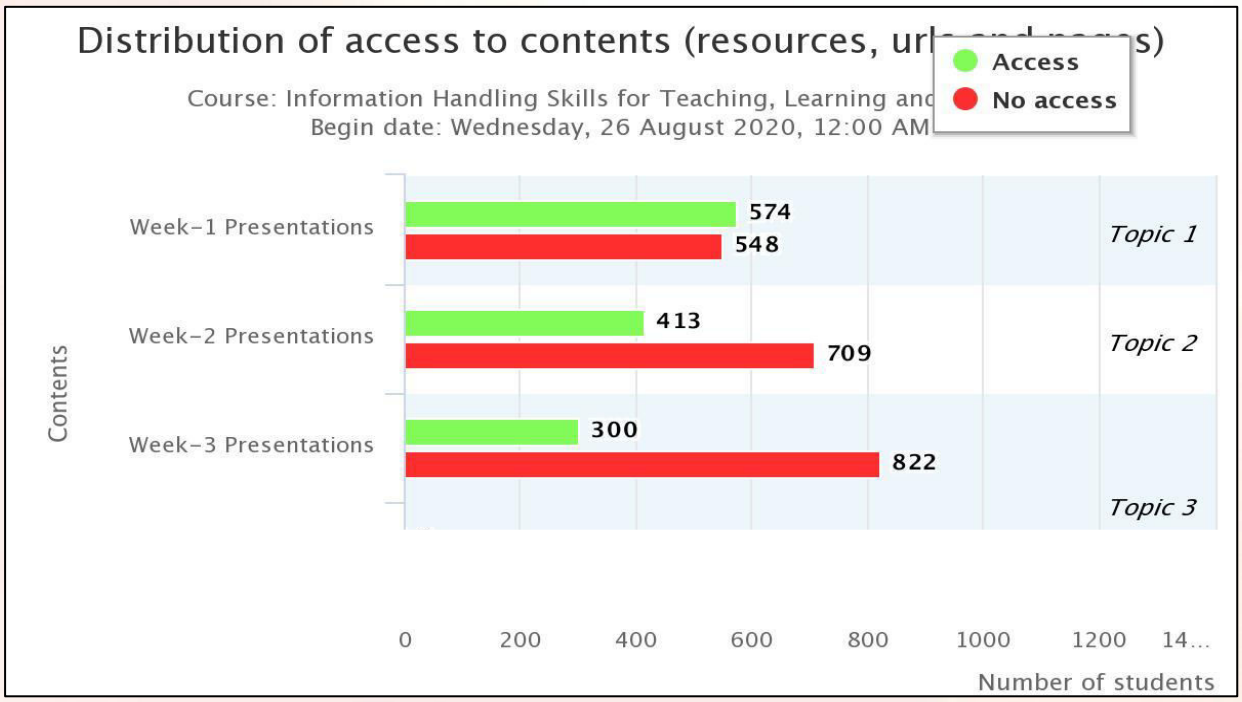
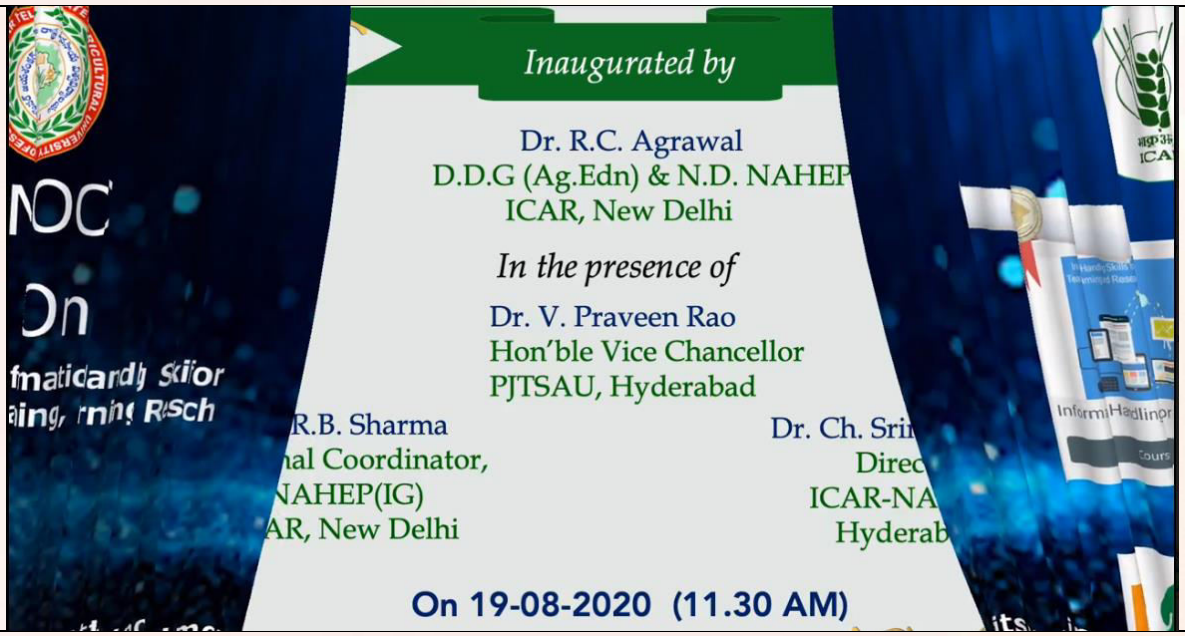


Fig. 21: Participants' access to presentations (graph from MOODLE analytics)

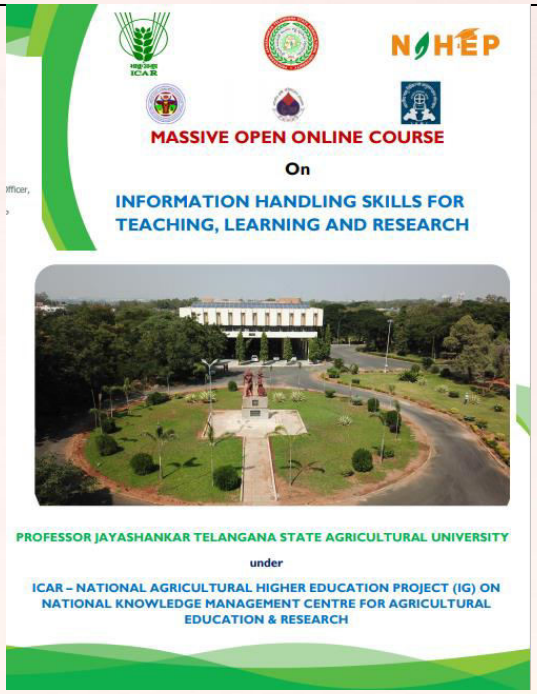
LIVE INTERACTION SESSION

In addition to the course lectures, a live interaction session was conducted for the benefit of the participants of ongoing MOOC on September 14, 2020 from 02.30 P.M to 05.30 P.M. **Mr. N. P. Ravi Kumar,** University Librarian i/c & Principal Investigator ICAR-NAHEP (IG)-NKMC4AER, PJTSAU, Hyderabad gave an Introduction to the Live Interactive Session on "Information Handling Skills for Teaching, Learning and Research". **Dr. D. Rama Rao,** Former Director of NAARM & ICAR- Emeritus Scientist, PJTSAU, Hyderabad had presented a lecture on Plagiarism, while **Mrs. Sushumna Rao Tadinada**, (Subject Expert, OER) took a lecture on Open Educational Resources. Lecture on Digital Repositories was delivered by **Dr. Amrender Kumar,** CC Principal Investigator, ICAR-NAHEP(IG) - NKMC4AER, Principal Scientist, ICAR-IARI, New Delhi) and **Dr.G. Rathinasabapathy,** (CC Principal Investigator) ICAR-NAHEP(IG)-NKMC4AER, University Librarian, TANUVAS, Chennai had presented a lecture on **Research Metrics**. The questions and doubts posed by various participants were answered in live interactive session by the Resource persons and Subject experts of the course. The session ended by formal vote of thanks proposed by **Mr. N. P. Ravi Kumar,** Principal Investigator ICAR-NAHEP (IG) - NKMC4AER. Live Session was attended by around 200 participants.

PUBLICITY MATERIAL OF MOOC PHASE-I



MOOC on IHSTLR Phase-I-Inaugural Video

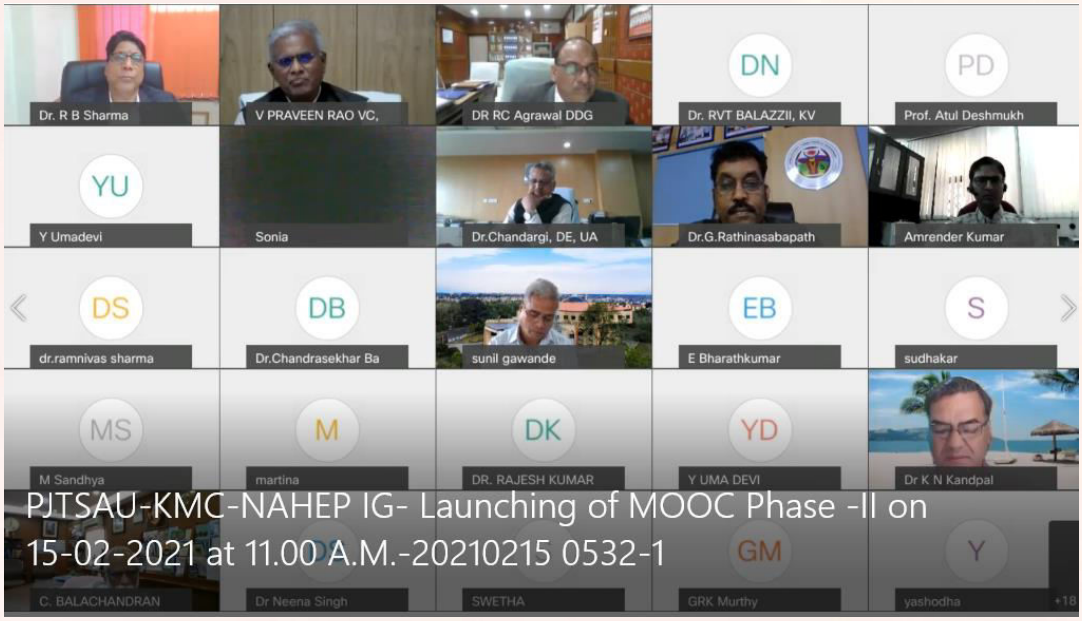


MOOC on IHSTLR Phase-I- Brochure

MOOC on IHSTLR Phase-I- Poster

MOOC ON "INFORMATION HANDLING SKILLS FOR TEACHING, LEARNING AND RESEARCH" PHASE-II

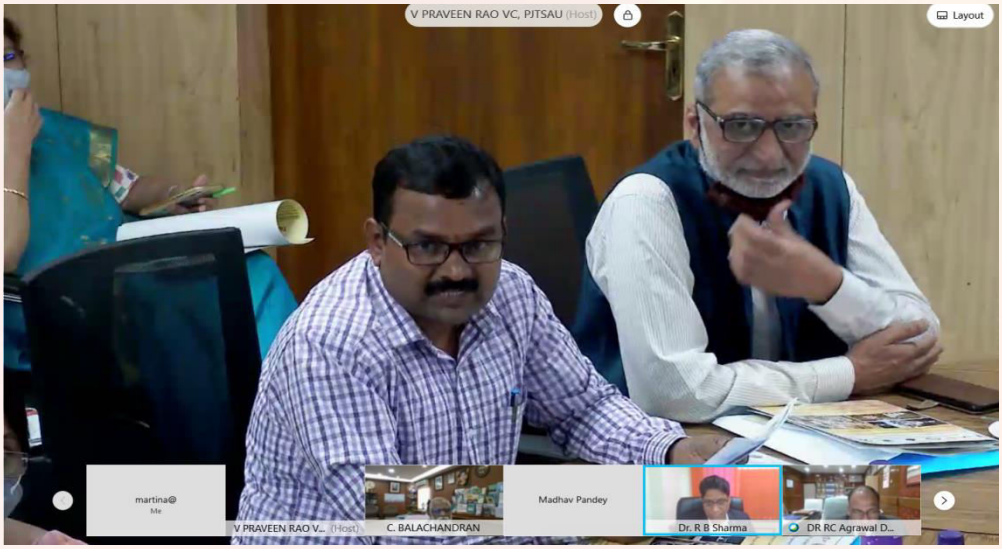
With an objective to reach greater number of stakeholders of NARES, NKMC4AER conducted the three week MOOC once again from 01-03-2021 to 21-03-2021 with value addition of content and the launch programme of MOOC Phase-II was conducted on 15.02.2021. Dr. R. C. Agrawal D.D.G(Edn) & National Director, ICAR-NAHEP, New Delhi was the Chief Guest of the programme and Dr. R.B. Sharma National Co-ordinator, ICAR-NAHEP(IG), New Delhi, Dr. D. Rama Rao, Former Director, ICAR-NAARM & Adjunct Professor, PJTSAU Hyderabad were the Guest of honour.



Virtual launch of MOOC on "Information Handling Skills for Teaching, Learning and Research" Phase-II, PJTSAU, Hyderabad under NKMC4AER, ICAR-NAHEP on 15.03.2021

The programme was started with the invocation by playing the songs of ICAR and PJTSAU. Mr. N. P. Ravi Kumar Principal Investigator, ICAR-NAHEP (IG) for NKMC4AER welcomed the Chief Guests, Respected Dignitaries, Invitees and Resource Persons and gave brief information about the course. Dr. V. Praveen Rao, Vice Chancellor, PJTSAU, Hyderabad acted as the chairman for the programme and led the programme. Dr. R.B. Sharma, National Coordinator, ICAR-NAHEP(IG), New Delhi addressed the gathering and remarked how COVID-19 pandemic effected the education system resulting in remote teaching on digital learning platforms. The National Coordinator, ICAR-NAHEP(IG) also spoke about the significance of the MOOCs and its advantages. Dr. D. Rama Rao, Former Director, ICAR-NAARM & Adjunct Professor, PJTSAU programme shared his views on library and its services and emphasized on the need of adopting online teaching in

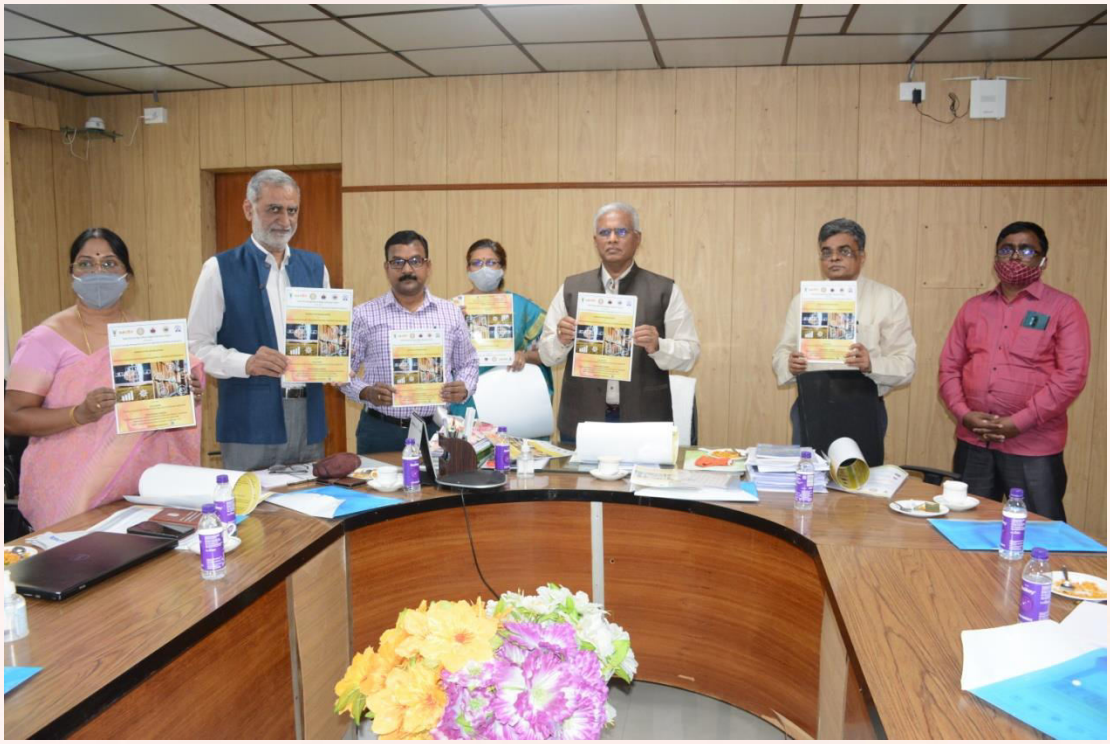
Agricultural Education System. Dr. R.C Agrawal, National Director, ICAR-NAHEP & D.D.G (Edn), New Delhi, launched the MOOC virtually in the presence of the Dignitaries, Faculty and Students who joined the programme online from various Agricultural Universities and ICAR Institutes across the country. Further, National Director praised the project personnel & guiding authorities for taking up initiatives such as MOOCs and encouraged the Agricultural Universities to have collaborated activities and take part in knowledge sharing.



Virtual launch of MOOC on "Information Handling Skills for Teaching, Learning and Research" Phase-II, PJTSAU, Hyderabad under NKMC4AER, ICAR-NAHEP on 15.03.2021

Virtual launch of MOOC on "Information Handling Skills for Teaching, Learning and Research" Phase-II, PJTSAU, Hyderabad under NKMC4AER, ICAR-NAHEP on 15.03.2021

The Hon'ble Vice Chancellor, PJTSAU in his presidential address highlighted the objectives of new education policy and motivated the faculty to adapt to the new mode of online education system. Dr. G. Rathinasabapathy (CC Principal Investigator) delivered Vote of thanks and thanked everybody for joining the online launch programme. The registration for the MOOC Phase-II began on 15-02-2021 and ended on 06-03-2021. The course lectures were started on 01-03-2021 and went on for three weeks.



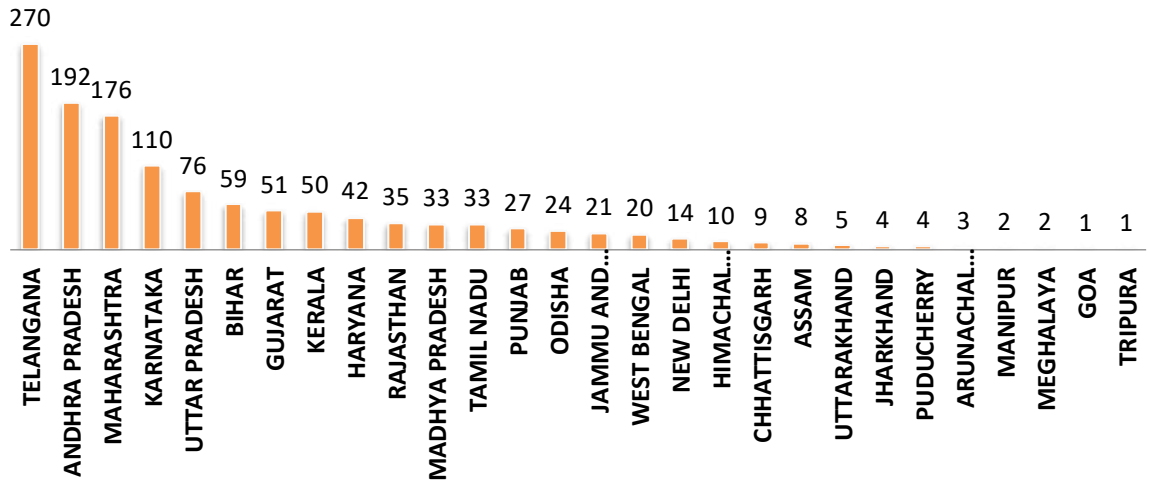
Virtual launch of MOOC on "Information Handling Skills for Teaching, Learning and Research" Phase-II, PJTSAU, Hyderabad under NKMC4AER, ICAR-NAHEP on 15.03.2021

A total of 1282 people from 25 states and 2 union territories registered for the MOOC-II course. The top five participating states were Telangana with 270 participants, Maharashtra with 176 participants, Andhra Pradesh with 192 participants, Karnataka with 110 participants & Uttar Pradesh with 76 participants. The participants were from all 71 ICAR recognized Agricultural Universities, 20 ICAR institutes and 6 other non-agricultural institutions. The top five participating universities were Professor Jayashankar Telangana State Agricultural University, Hyderabad with 169 participants, Acharya N.G. Ranga Agricultural University, A.P with 128 participants, Maharashtra Animal & Fisheries Sciences University, Nagpur with 96 participants, Dr. Punjabrao Deshmukh Krishi Viswa Vidyalaya, Akola with 77 participants and Sri Konda Laxman Telangana State Horticultural University, Hyderabad with 51 participants.

State	No. of Participants
Telangana	270
Andhra Pradesh	192
Maharashtra	176
Karnataka	110
Uttar Pradesh	76
Bihar	59
Gujarat	51
Kerala	50
Haryana	42
Rajasthan	35
Madhya Pradesh	33
Tamil nadu	33
Punjab	27
Odisha	24
Jammu and Kashmir	21
West Bengal	20
New Delhi	14
Himachal Pradesh	10
Chhattisgarh	9
Assam	8
Uttarakhand	5
Jharkhand	4
Puducherry	4
Arunachal Pradesh	3
Manipur	2
Meghalaya	2
Goa	1
Tripura	1

Table. 14 MOOC-II State wise participation

Fig. 22 MOOC-II State wise participation



PJTSAU, Hyderabad	169
ANGRAU, Guntur	128
MAFSU. Nagpur	96
DPDKVV, Akola	77
SKLTSHU, Hyderabad	51
SPVNRTVU, Hyderabad	44
BASU, Patna	39
CCSHAU, Hisar	38
KVASU, Wayanad	34
SHUATS, Allahabad	34
UAS, Raichar	27
PAU, Ludhiana	23
TNAU, Coimbatore	23
SVVU, Tirupati	22
SKDAU, Dantiwada	18
RVSKVV, Gwalior	16
UAS, Bangalore	17
ICAR-IVRI, Izatnagar	16
OUAT, Bhubaneswar	16
KAU, Thrissur	15
SKUAST, Srinagar	14
JNKVV, Jabalpur	14
KU, Gandinagar	13
DYSRHUV, Andhra Pradesh	12
GBPUAT, Pantnagar	12
KVAFSU, Bidar	12
GADVASU, Ludhiana	11
ICAR-NDRI, Karnal	11
AAU, Anand	10
BCKVV, Mohanpur	10
DBSKKV, Dapoli	10
DRPCAU, Pusa	15
TNFU, Nagapattinam	10
UHS, Bagalkot	10
VNMKV, Parbhani	10
ICAR-CIFE, Mumbai	9
ICAR-IARI, New Delhi	9
NDUAT, Faizabad	9
RUVAS, Bikaner	9
AAU, Jorhat	8
SVPUAT, Meerut	8
UAS, Dharwad	8
RLBCAU, Jhansi	7
SKUAST, Jammu	7
SKNAU, Jobner	7
WBUAFS, Kolkata	7

AU, Kota	6
IGKVV, Raipur	6
JAU, Junagarh	5
MAPUAT, Udaipur	5
MPKV, Rahuri	5
UAHS, Shimoga	5
BAU, Ranchi	4
CAU, Manipur	4
NDPCVV, Jabalpur	4
NAU, Navsari	4
SKRAU, Bikaner	4
TNVASU, Chennai	4
UBKVV, Cooch Behar	4
CSKHPKVV, Palampur	3
CSAUAT, Kanpur	3
CKVV, Durg	3
BAU, Sobour	2
DYSPUHF, Solan	2
DUVASU, Mathura	2
BUAT, Banda	1
GGVV, Bilaspur	1
HSUHS, Karnal	1
KUFOS, Kochi	1
LLRUVAS, Hisar	1

Table.15 MOOC-II Agricultural Universities participation

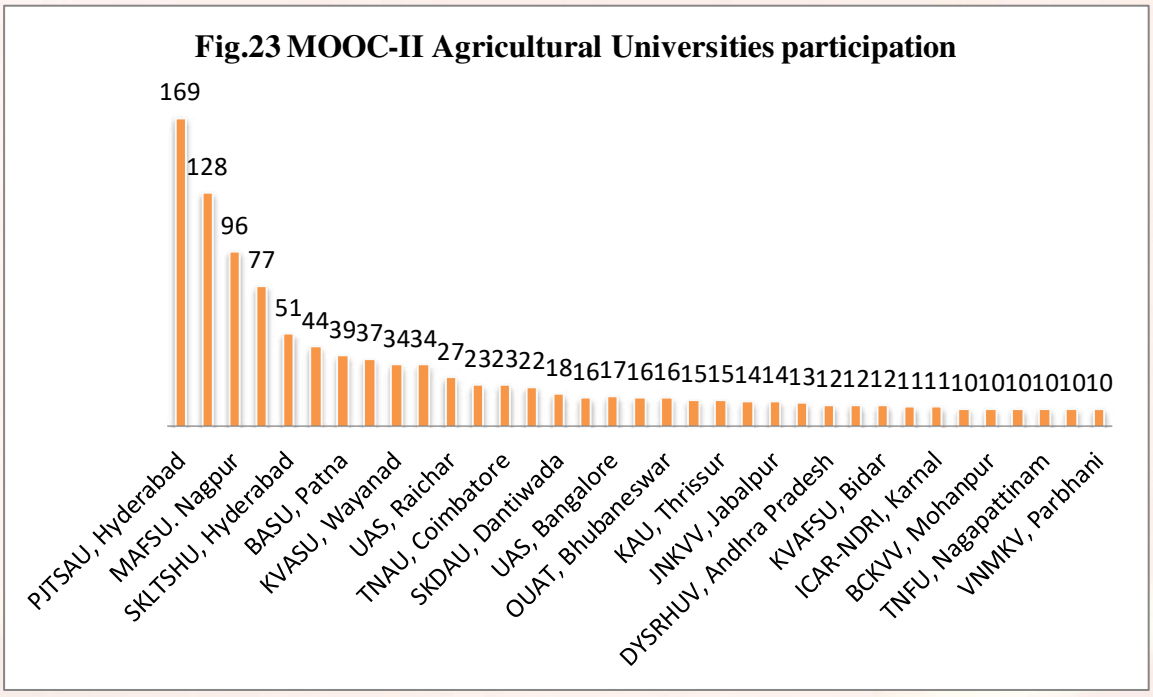


Fig.24 MOOC-II Agricultural Universities participation

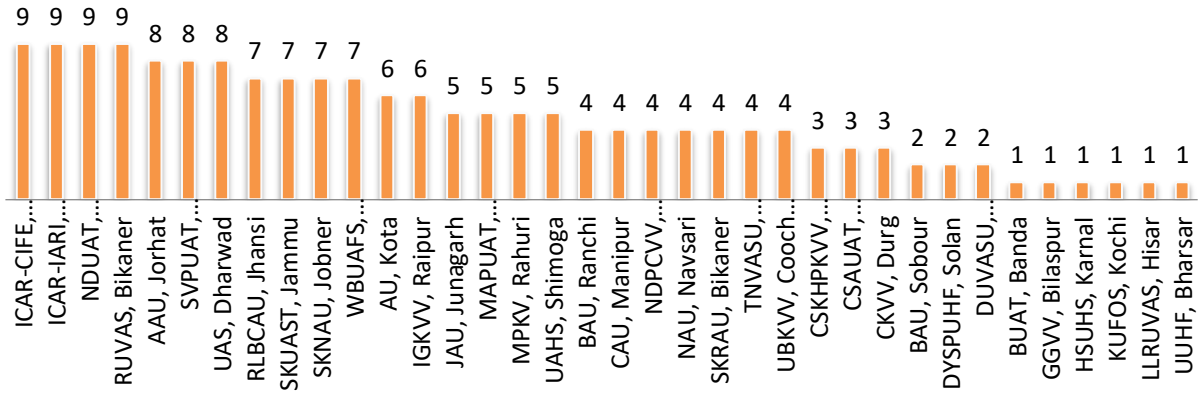
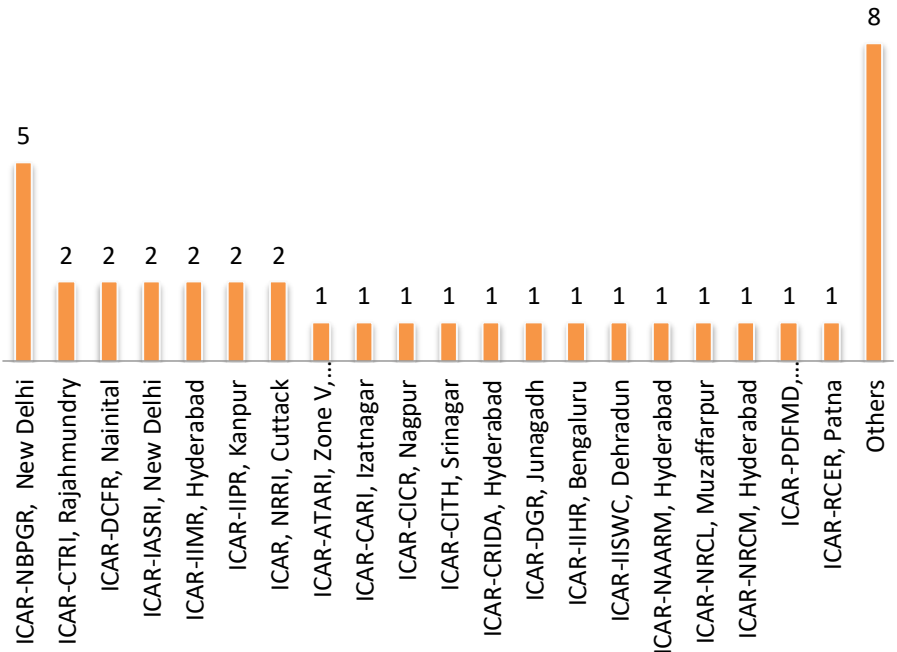


Fig. 25 ICAR Institues and others participation in MOOC-II

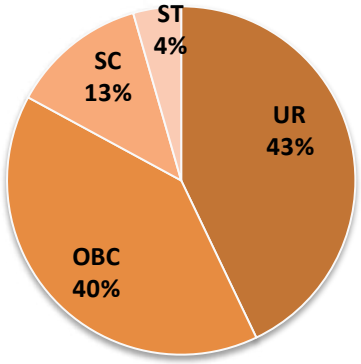


Among the 1282 participants, 507 were women i.e., about 40% of the total participants. Social Category-wise, 13% of the participants were from SC category, 4% from ST, 40% from OBC and 43% from unreserved category.

Social Category	No. of participants
UR	550
OBC	513
SC	162
ST	57
Total	1282

Table.16 MOOC-II participation-Social category wise

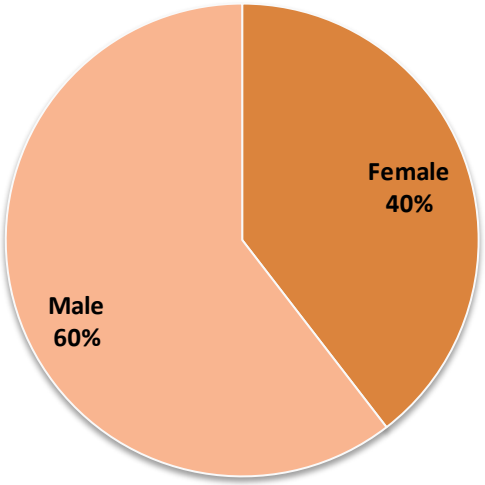
Fig.26 MOOC-II participation-Social category wise



Gender	No. of participants
Female	507
Male	775
Total	1282

Table.17 MOOC-II participation- Gender wise

Fig. 27 MOOC-II participation-Gender wise



Around 665 participants attended Week-1 quiz, 584 participants attended Week- 2 quiz and 540 participants attended Week-3 quiz while 506 participants took up final assessment quiz. Figures depict the details of quizzes and grades obtained by the participants in different quizzes.

5. In Week-1 quiz, 499 participants scored grades between 75-85, 333 participants scored grades between 65-75 and 166 scored grades below 65.
6. In Week-2 quiz, 438 participants scored grades between 80-90, 292 participants scored grades between 70-80 and 146 scored grades below 70.
7. In Week-3 quiz, 405 participants scored grades between 80-85, 270 participants scored grades between 70-80 and 135 participants scored grades below 80.

In the Final assessment, 380 participants scored grades between 82-90, 253 participants scored grades between 75-82 and 127 participants scored grades below 75.

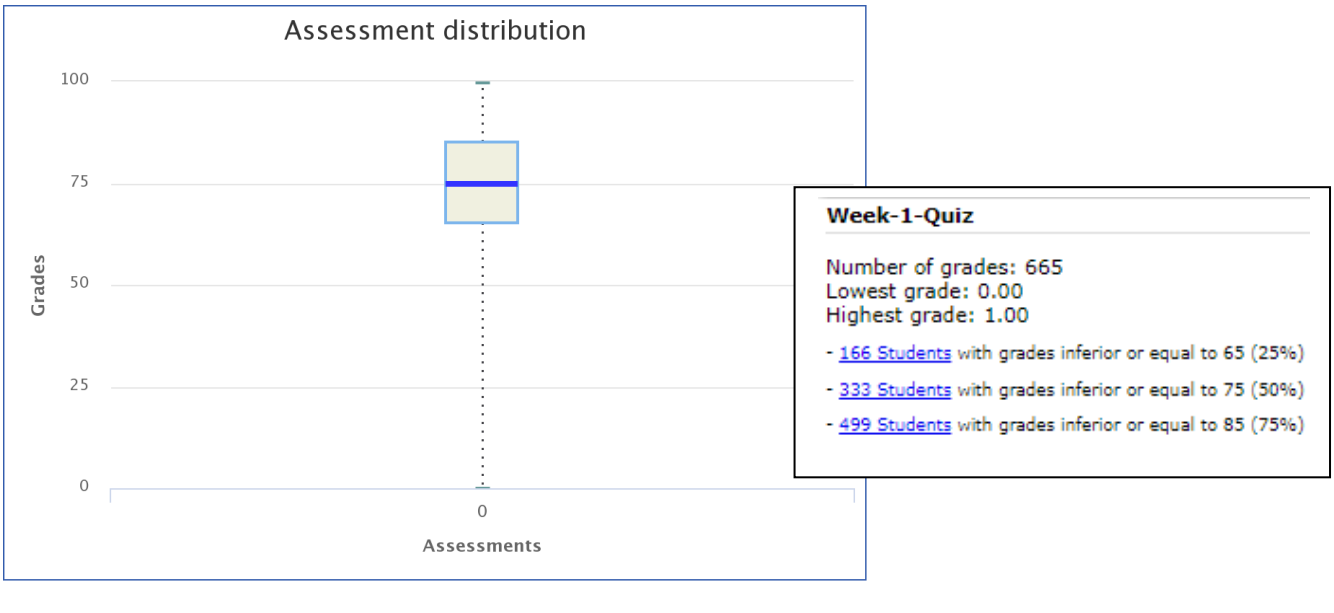


Fig. 28 Week-I quiz Assessment

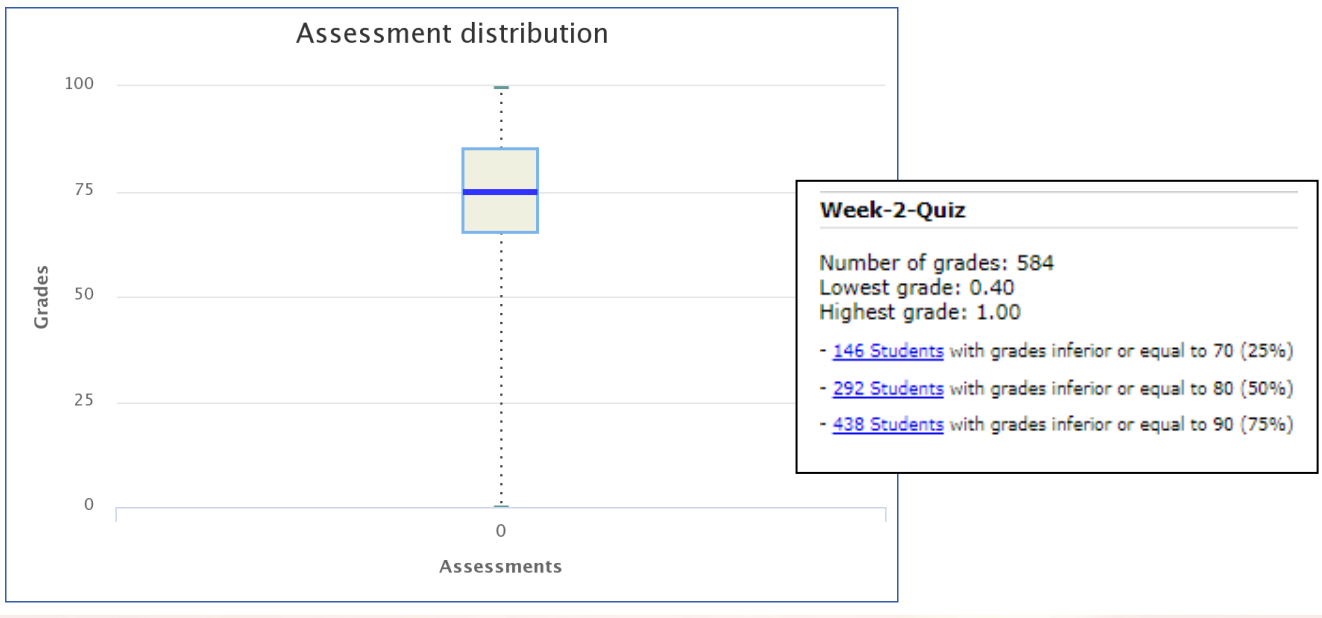


Fig. 29 Week-II quiz Assessment

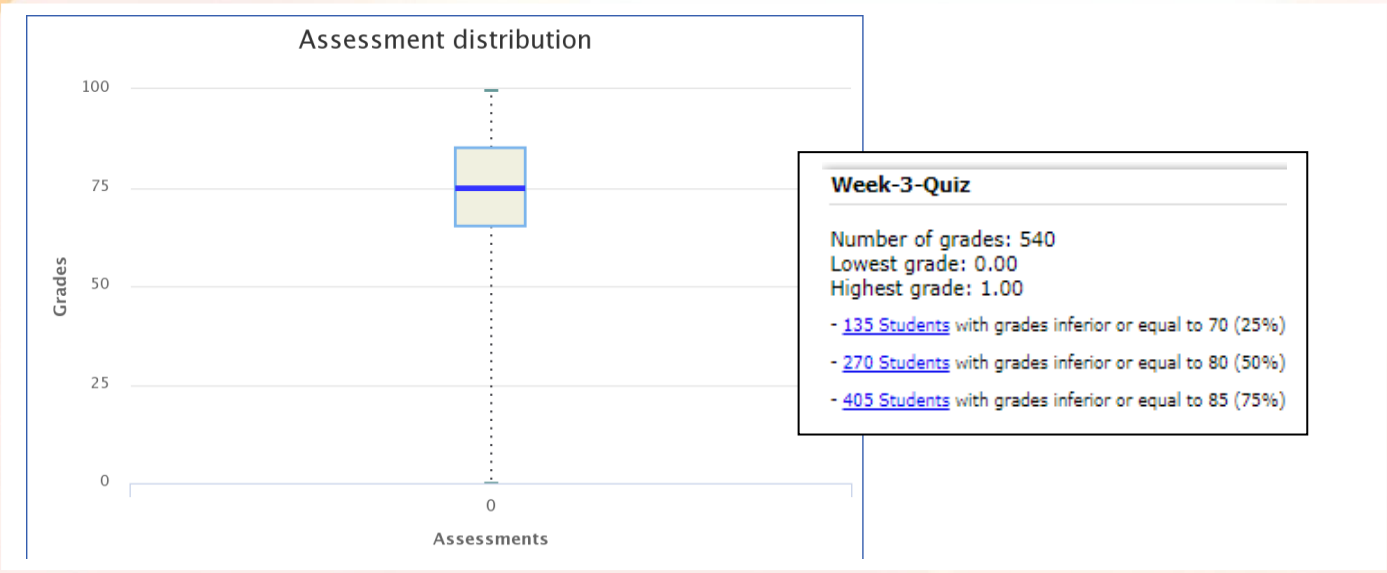


Fig. 30 Week-II quiz Assessment

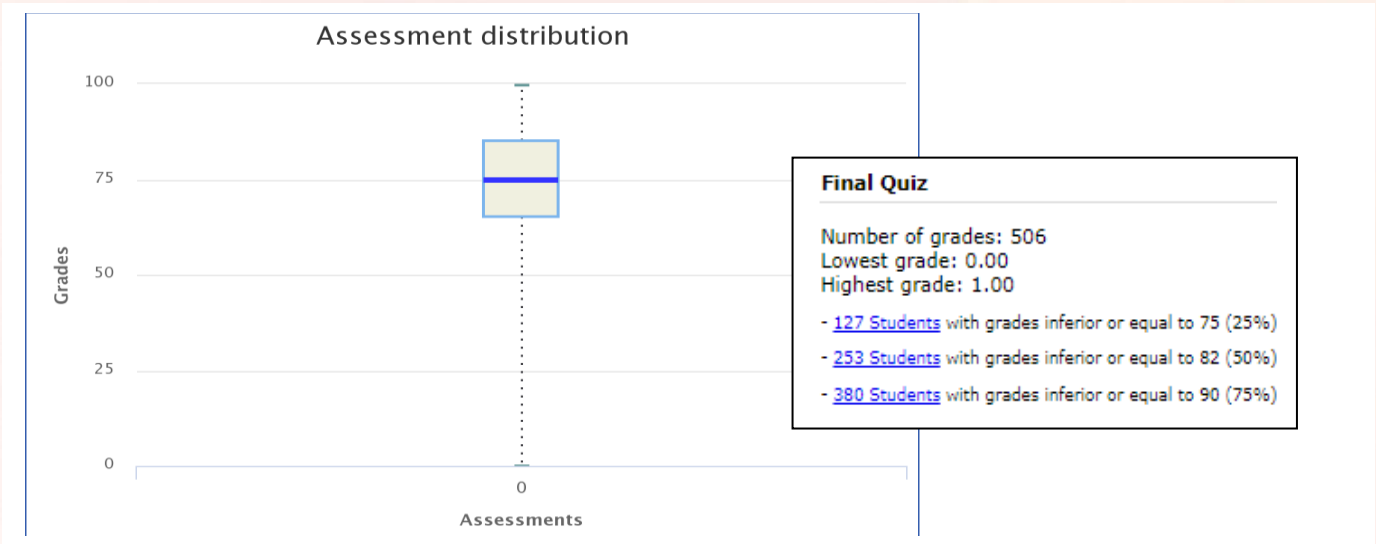


Fig. 31 Final quiz Assessment

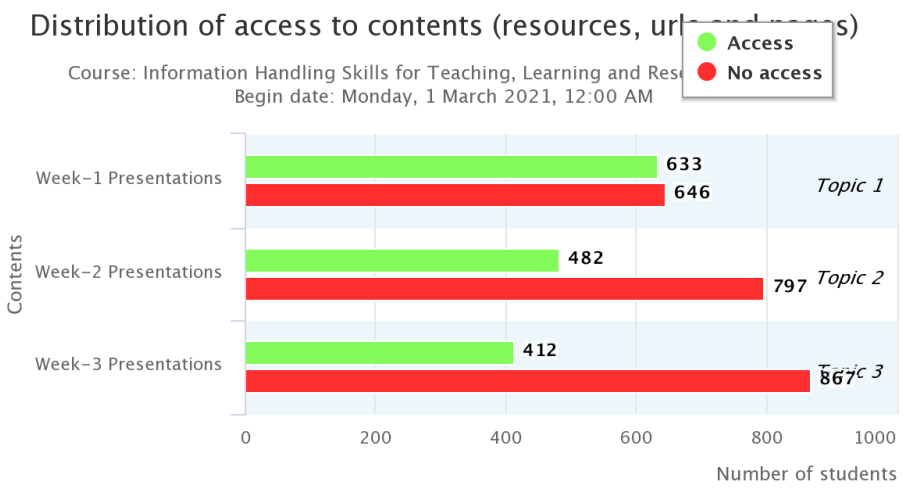


Fig. 32 Distribution of Access to content

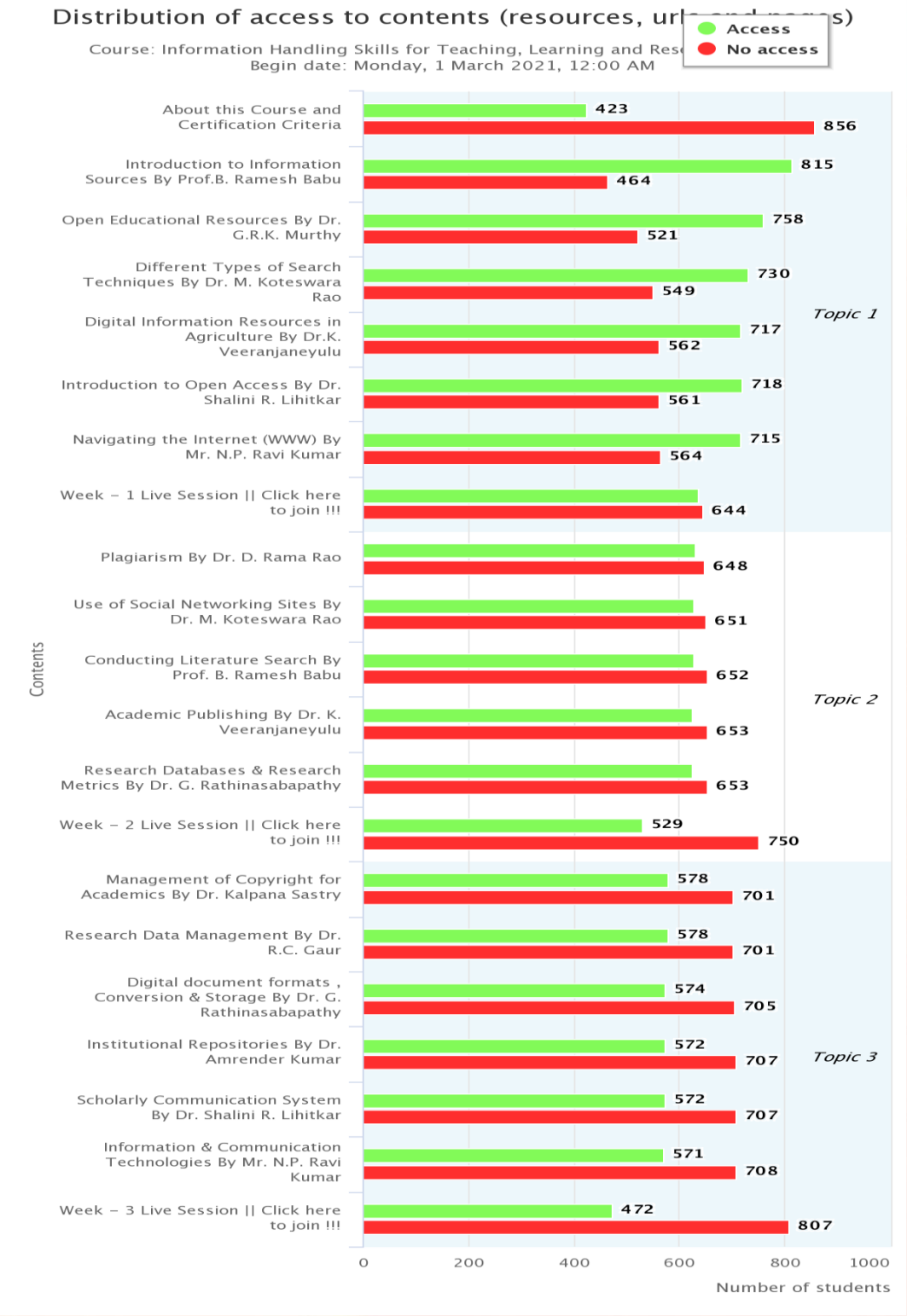


Fig. 33 Distribution of Access to content

The figures below depict the Participants' access details to the discussions and Q&A forum. Most of the participants accessed the resources viz. videos, downloadable presentations for further reference while the details of distribution of access to resources can be seen in the Figures

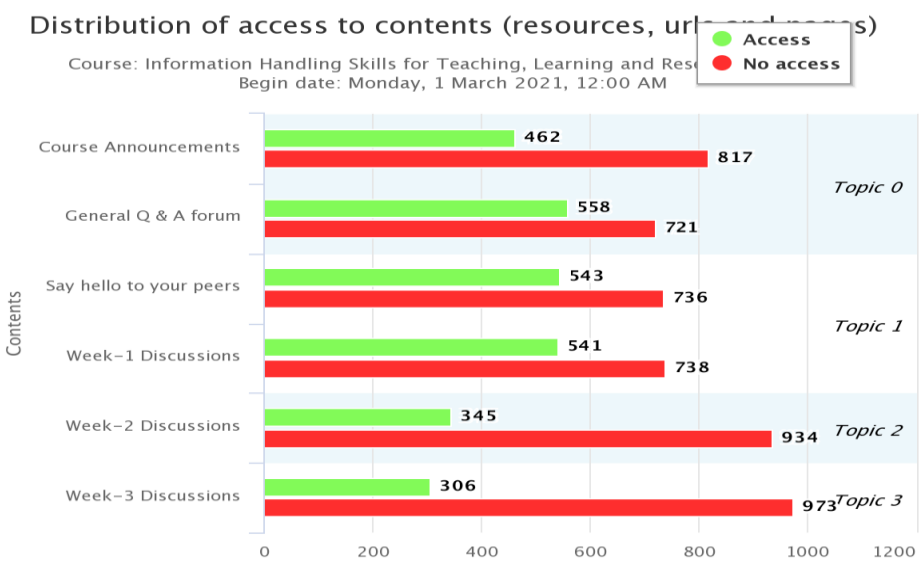


Fig. 34 Distribution of Access to content

resources viz. videos, downloadable presentations.

LIVE INTERACTION SESSIONS

In addition to the 17 course lectures, 3 weekly live interaction sessions were conducted for the benefit of the participants of MOOC phase-II and eminent professors and subject experts from renowned institutions of our country took part in the live sessions. 100+ MOOC-II participants across the country joined the live interactive session. The questions and doubts posed by various participants were answered during the live interactive session by the Resource persons and Subject experts of the course.

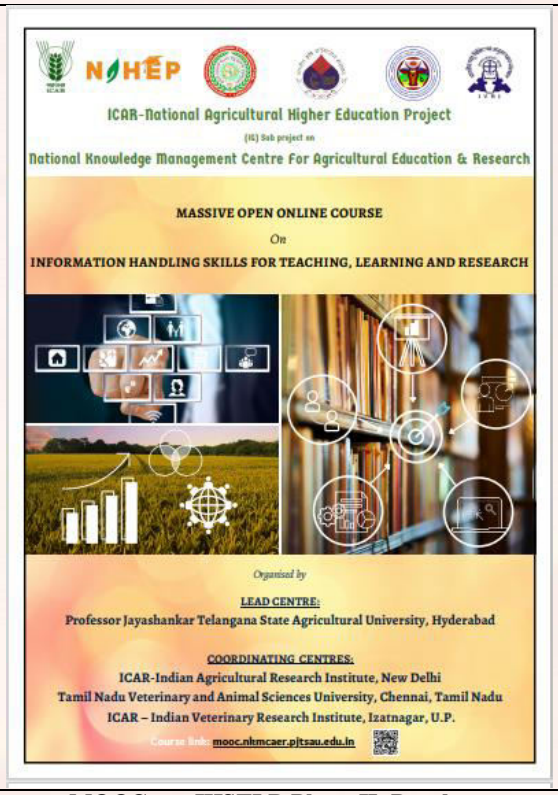
Week-I Live Interactive Session was held on March 05, 2021 from 4:00pm to 6:00pm. The first lecture was on CeRA- A gateway to e-resources in Agriculture by Mr. N. P. Ravi Kumar, University Librarian (FAC) & P.I, NKMC4AER, PJTSAU. The lecture covered topics like library setup and resources, importance of information resources, features of e-resources and specially CeRA, features of CeRA, its advantages and disadvantages. A demonstration of CeRA site was also shown to the participants. The second lecture was on Krishikosh- a digital repository for NARES by Dr. Amrender Kumar, (CC Principal Investigator) Principal Scientist (Agril. Statistics), AKMU, ICAR-IARI, New Delhi. The lecture covered topics like ICAR's role in development of Agriculture in India. application portion of Krishikosh repository, the purpose of Krishikosh and the advantages of Krishikosh. He also demonstrated the Krishikosh site.

Week-II Live Interactive Session was held on March 12, 2021, from 4:00pm to 6:00pm. The first lecture was on Dynamics of Research Metrics by Dr. G.Rathinasabapathy, CC Principal Investigator, NKMC4AER, NAHEP(IG) & University Librarian, TANUVAS, Chennai, Tamil Nadu. The topics covered during the lecture were Research Metrics and its constituents like Journal Metrics, Author Metrics, Article Metrics, Impact factor, H-Index etc. The second lecture was Access to Knowledge in Digital Era by Dr. L. Pratap Reddy, Former Director R&D, JNTU Working Chairman, Swecha & Professor, Department of ECE, JNTU-Hyderabad, Telangana. The topics covered during the lecture were recent developments in Knowledge sharing, importance of knowledge sharing, history of knowledge sharing in India and the influence on knowledge sharing development on research community.

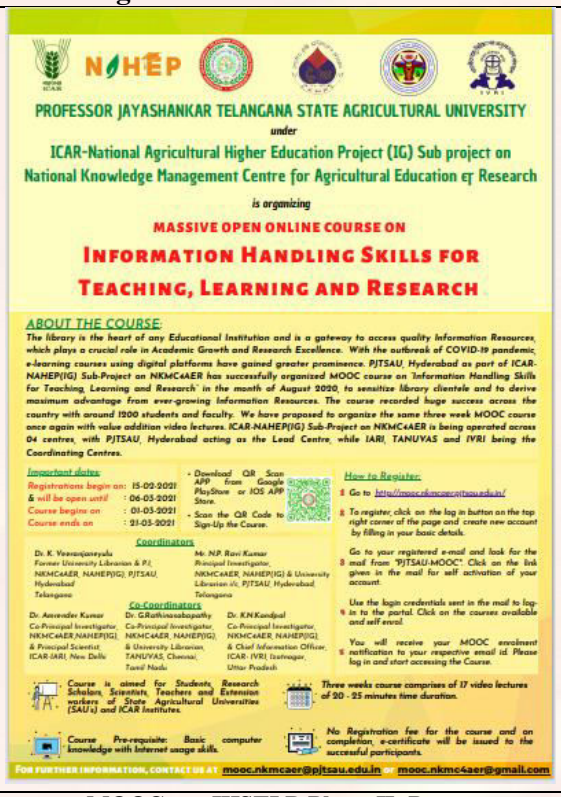
Week-III Live Interactive Session was held on March 19, 2021, from 2:30pm to 4:30pm. The first lecture was on Scholarly Publishing by Dr. Ramesh C. Gaur, Dean & Director (Library & Information), IGNCA, New Delhi. The topics covered during the lecture were UGC rules and regulations for publishing, Publication ethics and Copyright law in India, Plagiarism and also how to write a research paper. The second lecture was Copyright/ Copy left by Dr. M. Swamydas, Joint Director, Academic, Dept. of CSE, CBIT, Hyderabad, Telangana. The topics covered during the lecture history of knowledge, Free and Open source software, Copy left and Copyright, FOSS Source Licenses.

PUBLICITY MATERIAL OF MOOC PHASE-II

MOOC on IHSTLR Phase-II-Inaugural Video



MOOCs on IHSTLR Phase-II- Brochure



MOOCs on IHSTLR Phase-II- Poster

HIGHLIGHTS 2020-2021

Despite the overwhelming consequences of the pandemic, this global crisis has given us an extraordinary time for taking some brave moves as far the project is concern. The whole educational system from elementary to tertiary level has been collapsed during the lockdown period of COVID-19 not only in India but across the globe. In many educational institutions around the world, campuses are closed and teaching-learning has moved online. Taking this new learning mode as an opportunity we have planned to carry out all our activates in virtual mode. With this we have succeeded in conducting the following programs during this pandemic: MOOC Phase-I and Phase-II, Virtual Sensitization Programs, Virtual hands-on Programmes, Virtual National Level Training Programmes and International Virtual Symposium. The highlights of which are listed below:

i. Through MOOC-I and II on "Information Handling Skills for Teaching, Learning and Research" awareness on various tools and techniques in academic information handling was created among **2400** participants across the country including **1131** female participants. Individuals from **26 Indian states and 3 union territories** could get greatly benefitted from the courses. The participants were from all **71** state, central and deemed agricultural universities.

ii. With the weekly interactive live sessions as part of MOOC-I and II on "Information Handling Skills for Teaching, Learning and Research, a blended mode of teaching and learning environment was created.

iii. A total of 12 Virtual Sensitization Workshops/Programmes on Knowledge Management in the Networked Digital Environment were conducted by the all the partnering centres of NKMC4AER. Around **3,477** participants have taken part in these Workshops/Programmes.

iv. Two National Level Training Programmes were conducted by IARI and IVRI. About 346 participants from different AUs across the country had participated.

v. An International Virtual Symposium on Digital Scholarship was conducted by TANUVAS, Chenna for two days. Around 662 participants were registered for the symposium from all over the world.

EQUITY ACTION PLAN

Equity Action Plan							
Sl.No	**Activities**	**Target**	**Achieved**	**Social Category**		**Gender**	
				SC/ST	**Others**	**Female**	**Male**
1	Virtual Sensitization Workshops/ Programmes	15 Programmes	16 Programmes **Total Participants:** 3,542	1,596	4,346	2,146	3,796
2	MOOC-I and II on "Information Handling Skills for Teaching, Learning and Research"	2 Programmes	2 Programmes **Total Participants:** 2,400				

Equity Action Plan progress report

Commencement date of the project: 08th August 2018

Sl.No	**Particulars**	**Faculties**		**Students**	
		2018- 19	**2019-20**	**2018- 19**	**2019-20**
a	**ST**	**96(17.84%)**	**93(17.68%)**	**573(16.15%)**	**593(16.29%)**
b	**SC**	**46(8.55%)**	**41(7.79%)**	**289(8.15%)**	**306(8.40%)**
c	**Physically Challenged**	**1(0.19%)**	**1(0.19%)**	**51(1.43%)**	**46(1.26%)**
d	**Female**	**256(47.58%)**	**241(45.81%)**	**2187(61.67%)**	**2280(62.63%)**

1. Progress of EAP implementation

S.No.	**Item**	**Actions**	**Progress during (Starting to March 2021)**
a.	Automation of AU Libraries using Koha ILMS to facilitate sharing of Digital library resources with a unified Online Union Catalogue.	Extend Support to Automate the SAUs Libraries where Koha is not implemented	• No. of SAUs covered: 05 • No of Constituent College Libraries Covered: 07
b.	To sensitize the stakeholders	Organization of	• No of sensitization programmes

S.No.	Item	Actions	Progress during (Starting to March 2021)
	through capacity building programmes on knowledge management in the networked digital environment. At the same time to work on Altmetrics which are complementary metrics to traditional and citation-based metrics and sensitize the stakeholders through capacity building workshops.	sensitization programmes for stakeholders through capacity building programmes on knowledge management in the networked digital environment. And to see Altmetric tools for the stakeholders of SAUs are covered as part of this activity. All partnering centres to organize the workshops for about 150-200 students/faculty at their respective centres and neighboring states.	organized: 12
c.	Capacity Building Workshops for Agricultural Library Professionals and Training Programmes	Organization of Capacity Building Workshops for Agricultural Library Professionals on Koha ILMS, Institutional Repository Management and other relevant topics.	• No of Programs completed :02
d.	Introduce new knowledge delivery models like MOOCs for Students, Teachers and Librarians.	Massive Open Online Courses (MOOCs) on Library Science: Content development, Hosting,	• No of Programs completed : 02 • Total no of Participants: 2400

S.No.	Item	Actions	Progress during (Starting to March 2021)
		Management and Certification including organization of capacity building programme/workshop on MOOCs. 1 programme for 500 students/faculty/librarians.	
e.	Grievance redress mechanism (GRM)	•	• Does all the constituent collages have deputed GRO • Channels provided for registering a compliant. : **Drop box** • No of awareness program on GRM conducted and details on the participants? • No. of grievances redressed at tear 1 • No. of grievances escalated to tear 2: • No. of anonymous complaints received.
f.	Labour Management Plan	Civil Work under NAHEP (Minor Repairs and Renovation Works)	• No. of civil work completed :01 • No. of LMP[1] prepared & signed:01 • No. of IR& H[2]check list prepared: • Labor satisfaction rate: • (evaluation format & video : describing her/ his experience working in this work- facilities, entitlement, grievances, grievance lodging process etc…)

[1]LMP- Labor Management Plan (LMP)
[2]IR&H- Infrastructure Readiness and Handover report

I. ENVIRONMENTAL SUSTAINABILITY

GREEN CAMPUS INITIATIVE

As part of NAHEP IG sub project Green Campus Initiative Programme was organized at Main Campus of Professor Jayashankar Telangana State Agricultural University(PJTSAU), Rajendranagar, Hyderabad, on 24-07-2020 under Green Campus Initiative taken up by the University and ICAR-National Agricultural Higher Education Project (IG subproject on "National Knowledge Management Centre for Agricultural Education and Research"). Dr. V Praveen Rao, Hon'ble Vice-Chancellor, Prof T Papi Reddy, Chairman, Telangana State Council of Higher Education, Prof R Limdadri, Vice-Chairman, TSCHE, Registrar, Nodal Officer of Project, Principal Investigator, University Officials were participated in the programme.

Dr. V Praveen Rao, PJTSAU Vice Chancellor planting sapling at Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad

University Librarian & P.I of ICAR-NAHEP IG Sub Project on NKMC4AER, N.P Ravi Kumar planting sapling at Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad

About 300 saplings including Tecoma(Golden trumpet flower tree), Silver Oak, Tabeubnia(rosy trumpet flower tree), Plumaria(Temple tree) saplings were planted at the University Main Campus and also provided necessary support, as part of the Haritha Haram programme. This programme is one of the flagship programmes of the Telangana State Government, with the objective of increasing the tree cover in the state.

ENERGY - SOLAR POWER PANELS AND LED LIGHTING

Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad The Knowledge Management Centre installed LED Lighting and 158 Solar Power Panels of 52.60 KWp covering Stack Area, Student Reading Area, Digital Library, e-Resource Centre, Periodical Section and Circulation Section to produce Solar energy in order to save the expenditure on electricity as well to safeguard the environment.

Solar panels at Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad

Solar panels on Library building at Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad

AWARENESS INITIATIVES

As part of ICAR-National Agricultural Higher Education Project (IG subproject on "National Knowledge Management Centre for Agricultural Education and Research"), Sensitization workshops and Capacity building workshops were organized for stakeholders of agricultural institutes to share information and equip the users about knowledge resources. In all these programmes and workshops a lecture on "Environmental Safegaurd" was included.

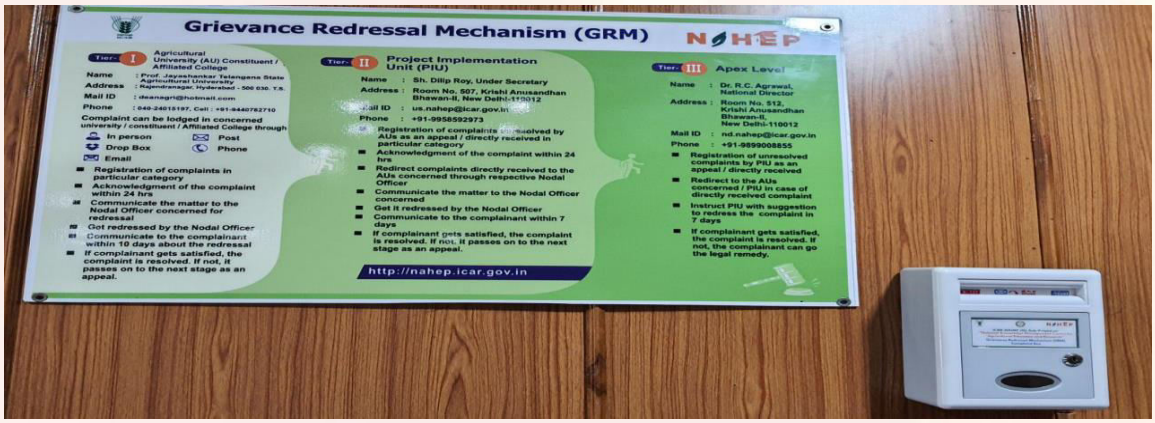
Lecture on "Environmental Safegaurd" in a workshop conducted under ICAR-National Agricultural Higher Education Project (IG subproject on "National Knowledge Management Centre for Agricultural Education and Research")

E-WASTE MANAGEMENT

E-waste or Waste Electrical and Electronic Equipment (WEEE) are loosely discarded, surplus, obsolete, broken, electrical or electronic devices. Most of the waste electronic items are stored at offices as people do not know how to discard them. This ever-increasing waste is very complex in nature and is also a rich source of metals such as gold, silver, and copper, which can be recovered and brought back into the production cycle. A total of 1072 Kgs of e-waste such as monitors, keyboards, CPU's, printers, cables generated at Knowledge Management Centre, PJTSAU was handed over to ENVIRO Collection Centre (Telangana State Pollution Control Board authorized agency) located at IDA Jeedimetla, Hyderabad on 16-03-2021 for e-waste recycling/proper dismantling.

II. GRIEVANCE REDRESSAL SYSTEM

A Three-Tier Grievance Redressal Mechanism at Institute level, Project Implementation Unit (PIU) level and Apex Level has been set up and displayed along with other institution GRM Boards, to facilitate the students and staff to raise their grievances.



GRM Display Board and Complaint Box located at KMC, PJTSAU, Hyderabad

III. ENVIRONMENTAL SAFEGAURD MEASURES

Environmental Safeguard Measures boards were placed at various places in the PJTSAU, Hyderabad under ICAR-NAHEP (IG) Sub-Project on "NKMC4AER" , KMC, PJTSAU

Fire extinguisher and Laboratory Safety Display Boards at various places of PJTSAU, Hyderabad

IV. RECRUITMENT

PJTSAU

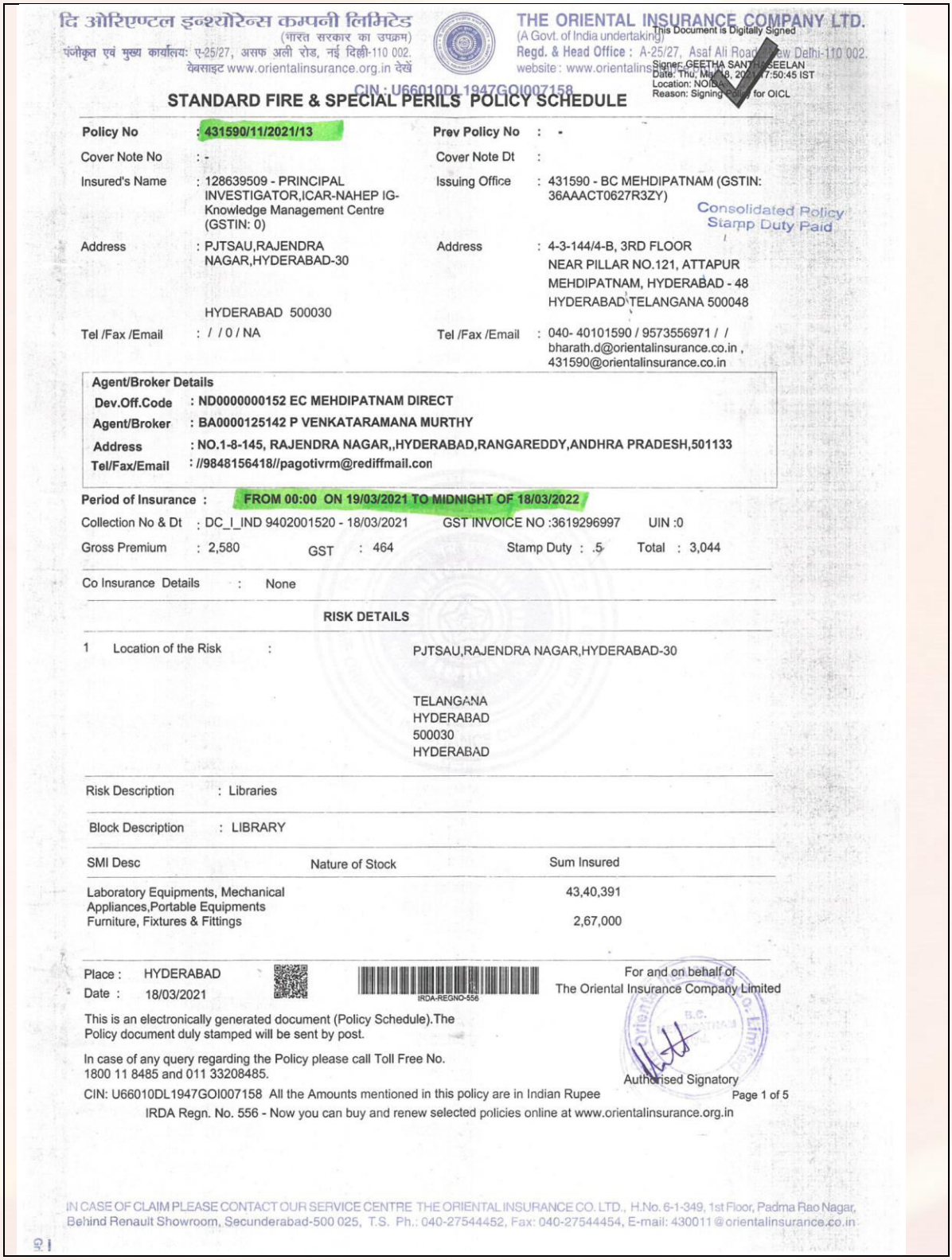
Research Associate (Computer Science) was recruited in May 2019 but after working up to March 2020, he resigned. During lockdown from March to May 2020, RA post fell vacant due to COVID-19 Pandemic. Research Associate (Computer Science) was again re-notified in July, 2020. Recruitment process of RA was completed by August 2020. RA after working 2.5 months up to November 2020 has resigned from post. Aftermath of which, immediately both SRF (Computer Science) & RA(Computer Science) posts were re-notified and recruitment has been completed in November 2020.

Status of Contractual Staff for the year 2020-2021

	Research Associate	Senior Research Fellow	Office Assistant	Multi Tasking Staff
PJTSAU Hyderabad	01	02	-	01
IARI New Delhi	01	02	01	01
TANUVAS Chennai	-	01	-	01
IVRI Izatnagar	-	01	-	01
Total	**02**	**06**	**01**	**04**

V. ASSET INSURANCE

All the equipments purchased under this project are insured under Asset Insurance Policy from The Oriental Insurance Company.



दि ओरिएण्टल इन्श्योरेन्स कम्पनी लिमिटेड
(भारत सरकार का उपक्रम)
पंजीकृत एवं मुख्य कार्यालय: ए-25/27, असफ अली रोड, नई दिल्ली-110 002.
वेबसाइट www.orientalinsurance.org.in देखें

THE ORIENTAL INSURANCE COMPANY LTD.
(A Govt. of India undertaking)
Regd. & Head Office : A-25/27, Asaf Ali Road, New Delhi-110 002.
website : www.orientalinsurance.org.in

This Document is Digitally Signed
Signer: GEETHA SANTHASEELAN
Date: Thu, May 18, 2021 17:50:45 IST
Location: NOIDA
Reason: Signing Copy for OICL

CIN : U66010DL1947GOI007158

STANDARD FIRE & SPECIAL PERILS POLICY SCHEDULE

Policy No	: **431590/11/2021/13**	**Prev Policy No**	: -
Cover Note No	: -	Cover Note Dt	:
Insured's Name	: 128639509 - PRINCIPAL INVESTIGATOR,ICAR-NAHEP IG-Knowledge Management Centre (GSTIN: 0)	Issuing Office	: 431590 - BC MEHDIPATNAM (GSTIN: 36AAACT0627R3ZY)
Address	: PJTSAU,RAJENDRA NAGAR,HYDERABAD-30 HYDERABAD 500030	Address	: 4-3-144/4-B, 3RD FLOOR NEAR PILLAR NO.121, ATTAPUR MEHDIPATNAM, HYDERABAD - 48 HYDERABAD TELANGANA 500048
Tel /Fax /Email	: / / 0 / NA	Tel /Fax /Email	: 040- 40101590 / 9573556971 / / bharath.d@orientalinsurance.co.in , 431590@orientalinsurance.co.in

Consolidated Policy
Stamp Duty Paid

Agent/Broker Details

Dev.Off.Code	: **ND0000000152 EC MEHDIPATNAM DIRECT**
Agent/Broker	: **BA0000125142 P VENKATARAMANA MURTHY**
Address	: **NO.1-8-145, RAJENDRA NAGAR,,HYDERABAD,RANGAREDDY,ANDHRA PRADESH,501133**
Tel/Fax/Email	: **//9848156418//pagotivrm@rediffmail.con**

Period of Insurance : **FROM 00:00 ON 19/03/2021 TO MIDNIGHT OF 18/03/2022**

Collection No & Dt : DC_I_IND 9402001520 - 18/03/2021 GST INVOICE NO :3619296997 UIN :0

Gross Premium : 2,580 GST : 464 Stamp Duty : .5 Total : 3,044

Co Insurance Details : None

RISK DETAILS

1 Location of the Risk : PJTSAU,RAJENDRA NAGAR,HYDERABAD-30
TELANGANA
HYDERABAD
500030
HYDERABAD

Risk Description : Libraries

Block Description : LIBRARY

SMI Desc	Nature of Stock	Sum Insured
Laboratory Equipments, Mechanical Appliances,Portable Equipments		43,40,391
Furniture, Fixtures & Fittings		2,67,000

Place : HYDERABAD
Date : 18/03/2021

IRDA-REGNO-556

For and on behalf of
The Oriental Insurance Company Limited

This is an electronically generated document (Policy Schedule).The Policy document duly stamped will be sent by post.

In case of any query regarding the Policy please call Toll Free No. 1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee Page 1 of 5

IRDA Regn. No. 556 - Now you can buy and renew selected policies online at www.orientalinsurance.org.in

IN CASE OF CLAIM PLEASE CONTACT OUR SERVICE CENTRE THE ORIENTAL INSURANCE CO. LTD., H.No. 6-1-349, 1st Floor, Padma Rao Nagar, Behind Renault Showroom, Secunderabad-500 025, T.S. Ph.: 040-27544452, Fax: 040-27544454, E-mail: 430011@orientalinsurance.co.in

FINANCIAL SUMMARY

Procured all sanctioned items as per World Bank STEP guideline. Total numbers of procurement activities initiated in World Bank STEP are 36 and completed all the activities accordingly maintaining 100% utilization.

Financial Statement of PJTSAU Hyderabad

Name of the Participating University/Implementing Centre: Professor Jayashanakar Telangana State Agricultural University Hyderabad
National Agricultural Higher Education Project
Details of Grant Received from PIU-NAHEP and Expenditures incurred as Participating Unit/Implementing centre in r/o Component IC(Innovation Grant)
Interim Unaudited Financial Report(IUFR) for the Quarter Ending 31st March 2021

(In Rupees)

Serial No.	Call	Project Code	Name of the Project	Name of the University	Partners	Opening Balance	Amount Received from PIUduring the quarter	Expenditure paid during the quarter	Advances paid during the qurter (except secured mobilisation Advances)	Closing Balance	Closing Balance	Fund Received during current Financial Year	Expenditures during Current Financial Year	Cumulative Fund Received	Cumulative expenditures	Cumulative unsettled Advances except secured mobilisation Advances
						(a)	(b)	(c)	(d)	)=(a) +(b) -(c) - (	(f)	(g)	(h)	(i)	(j)	(k)
1	I	IC(IG)	National Knowledge Management Centre for Agricultural Education and Research	PJTSAU Hyderabad	IARI New Delhi, TANUVAS Chennai, IVRI Izatnagar	3314164	0	748181	0	2565983	2565983	4056500	4595636	18053500	15487517	0
				Sub-total		3314164	0	748181	0	2565983	2565983	4056500	4595636	18053500	15487517	0
				Grand Total		3314164	0	748181	0	2565983	2565983	4056500	4595636	18053500	15487517	0

Note: The balance amount under Capital Head of Rs. 8307.00 has been remitted to ICAR Unit NAHEP Account

Name of the Project	Details of Advances	Advances Outstanding at beginning of Quarter		Advances Given During Quarter		Advances adjusted against expenditure During the Quarter including previous		Advance Outstanding at end of Quarter		Refund from Advances settled
		Secured Mobilisation advances	Other Advances	Secured Mobilisation advances	Other Advances	Secured Mobilisation advances	Other Advances	Secured Mobilisation advances	Other Advances	Other Advances
		(a)	(b)	(c)	(d)	(e)	(f)	g=(a)+ (c)-(e)	h=(b)+ (d)-(f)-(i)	(i)
	Grant in Aid Capital				0					
	Grant in Aid General				0					
	Total	0	0	0	0					

*For the Universities following Accrual Accounting

Particular	Amount in Rs	Remarks		
	Outstanding Liabilities at	Liabilitiesfor the Quarter	Liabilities paid During the Quarter	Liabilities Outstanding at end of Quarter
	(a)	(b)	(c)	(d)=(a)+(b)-(c)
Name of the Project				

Date 01-04-2021

Signature: Comptroller / Finance

COMPTROLLER
Administrative Officer
PJTSAU, Rajendra Nagar,
Hyderabad, Telangana State-500 030.

Signature: PIU Project Head

PRINCIPAL INVESTIGATOR
ICAR-NAHEP (IC) on " National Knowledge Management Centre for Agricultural Education and Research
Knowledge Management Centre, PJTSAU
Rajendranagar, Hyderabad-500 030.

Note : Expenditure paid during the quarter = Expenditure incurred and paid during the quarter+ Secured Mobilisation advances given during the quarter - advances (both secured mobilisation advances and other advances) adjusted during the quarer + opening liabilities paid during the quarter

National Agricultural Higher Education Project
Project Receipts and Payments Account cum Expenditure Control sheet
For the Period 2020-21 (in Rupees)
Name of the University Professor Jayashankar Telangana State Agricultural University, Hyderabad Component IC Innovation Grant (IG)

S. No.	Head of Account	Sanctioned Budget 2020-21	Opening Balance as on 01.04.2020	Grant Received during the year 2020-21	Total Available Funds	Expenditure During year (Cash Basis) 2020-21	Outstaning Advances as on 31.03.2021	Capital Savings surrendered to PIU during FY 2020-21	Closing Balance as on 31.03.2021
1	2	3	4	5	(4+5)=6	7	8	9	(6-7-8-9)=10
A	**Goods & Equipment**								-
1	Equipment, Plant & Machinery	0	0	0	0	0			0
2	Office Equipment	0	0	0	0				0
3	Laboratory Equipment	1800000	1701	1800000	1801701	1796125		5576	0
4	Furniture & Fixtures		960	0	960	0		960	0
5	Computers & peripherals (Hardware & Software)	0	0	0	0	0			0
6	Books & Journals	0			0	-			0
	Sub Total (A)	1,800,000.00	2,661.00	1,800,000.00	1,802,661.00	1,796,125.00	-	6,536.00	-
B	**Civil Works**								
7	Minor repairs & renovation works	0	1,771.00	-	1771			1,771.00	-
	Sub Total (B)	0	1771	0	1771	0	0	1771	0
	Capital Expenditure Sub-total (A+B)	1800000	4,432.00	1,800,000.00		1,796,125.00			-
C	**Human Capacity Building**								
8	National Training	1000000	162,914.00	250,000.00	412914	151,155.00			261759
9	International Training	0	700,000.00	-	700000	-			700000
10	Short Visits/ Seminars	0	-	-	0	-			0
11	Meetings & Workshops	0	-	-	0	-			0
	Sub Total (C)	1000000	862914	250000	1112914	151155	0		961759
D	**Consultancy**				0				
12	National Level Consultancies				0	-			
	Sub Total (D)	0	0	0	0	0	0		0
E	**Recurrent Cost**				0				
13	Travel expenses	200000	153,191.00	50,000.00	203191	15,048.00			188143
14	Contractual Services (RA/SRF/ System Analyst /Programmer)	1860000	1,879,281.00	651,000.00	2530281	1,715,550.00			814731
15	Operational Costs	1000000	205,300.00	1,000,000.00	1205300	612,262.00			593038
16	Institutional Charges	306000	1.00	305,500.00	305501	305,496.00			5
	Sub Total (E)	3366000	2237773	2006500	4244273	2648356	0		1595917
	Revenue Expenditure Sub-total (C+D+E)	4366000	3,100,687.00	2,256,500.00	5,357,187.00	2,799,511.00			2,557,676.00
	Grand Total (A+B+C+D+E)	6166000	3105119	4,056,500.00	7161619	4595636	0	8307	2557676

Interest earned from savings bank account and refunded to PIU,NAHEP Bank Account Rs. 65117 (Rupees Sixty Thousand One hundred seventeen only)

* Any advance treated as expenditure and later funds received will be reduced from that particulars expense head.
** Blank Cells to be filled only colored cells are auto calculated.
# Total Expenditure will not exceed from sanctioned budget . Excess expenditure over sanctioned budget will be disallowed. If any expenditure excess over sanctioned budget by 10% then AU should take approval from PIU NAHEP

*** Figures of IUFR and SoE must match.
Revenue/Interest Refunded to PIU may please be specified as FOOTNOTE

Date 01-04-2021

Signature: Comptroller / Finance

COMPTROLLER
Professor Jayashankar Telangana State
Agricultural University
Rajendranagar, Hyderabad-500030.

Signature: PIU Project Head

PRINCIPAL INVESTIGATOR
ICAR-NAHEP (IC) on "National Knowledge Management Centre for Agricultural Education and Research"
Knowledge Management Centre, PJTSAU
Rajendranagar, Hyderabad-500 030.

Financial Statement of IARI, New Delhi

Release and Expenditure under Component 1C (Innovation Grant) (Please strike off which is not applicable)
Statement of Grants received from PIU- NAHEP and Expenditure incurred by the Participating University/Implementing Centre for the quarter ending 31st March, 2021 (In Rupees)

Name of the Participating University/Implementing Centre: ICAR-Indian Agricultural Research Institute, Pusa New Delhi-110012

S. No.	Project Code & Component	Name of the Project	Opening Balance	Receipts from PIU-NAHEP	Total (Receipts) (4+5)	Expenditure Under (A) Goods & Equipment						(B) Civil Works	Sub-total (A+B) (Capital)
						Equipment / Plant	Office Equipment	Laboratory Equipment	Furniture	Computer	Library Books & Journals		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	71-02& Com.-1C(IG)	National Knowledge Management Centre for Agricultural Education and Research	4663217.00	200000.00	4863217.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

(C) Human Capacity Building				(D) Consultancy	(E) Recurring Cost				Sub-Total (C+D+E) (Revenue)	Grand Total (Col. 14 + Col.24)	Amount refunded, if any	Closing Balance as on (Col. 6 - Col.25-col.26)
National level training	Inter national	Short visits/ Seminar	Meeting/ Workshop	National Level	Travel Expenses	Contract Services	Operational cost	Institutional charges				
15	16	17	18	19	20	21	22	23	24	25	26	27
63872.00	0.00	0.00	0.00	0.00	0.00	739611.00	566602.00	140180.00	1510265.00	1510265.00	1618497.00	1734455.00

Certified that expenditure of Rs. 15,10,265/- (Rs. Fifteen Lakhs Ten Thousand Two Hundred Sixty Five only) as per the head-wise details above, has actually been incurred during the period from Jan., 2021 to March 2021.
Under the project: "National Knowledge Management Centre for Agricultural Education and Research" Component: 1C (IG) at the implementing unit : IARI (AKMU) of the NAHEP after completing all codal formalities and observing the World Bank established procedure/guidelines for the purpose for which grant was released and is well within the overall sanctioned budget of each sub-project.

06/04/21

CCPI of Sub-project
Signature & stamp

DR. AMRENDER KUMAR
CCPI NAHEP (IG)
Agricultural Knowledge Management Unit
ICAR-IARI, New Delhi-110012

Asst. Administrative Office (AKMU)

सहायक प्रशासनिक अधिकारी
Asstt. Admn. Officer
कृषि ज्ञान प्रबंध इकाई
Agricultural Knowledge Management Unit
भाकृअनप–भाकृअनु संस्थान, नई दिल्ली–110012
I.C.A.R. - I. A. R. I., New Delhi-110012

07/04/2021

~~Comptroller~~ / **Finance and Accounts Officer**
Signature & stamp

सरिता महेन्द्रू
SARITA MAHENDRU
सहायक वित्त एवं लेखा अधिकारी
Asstt. Finance & Accounts Officer
भा.कृ.अनु.सं.–नई दिल्ली–12
IARI, New Delhi-12

Head of the Institution
Signature & stamp

Name of the Participating University/Implementing Centre: ICAR-Indian Agricultural Research Institute, Pusa New Delhi-110012
National Agricultural Higher Education Project
Details of Grant Received from PIU-NAHEP and Expenditures incurred as Participating Unit/Implementing centre in r/o Component 1C (Innovation Grant)
Interim Unaudited Financial Report(IUFR) for the Quarter Ending **31st March, 2021 (In Rupees)**

Serial No.	Call	Project Code	Name of the Project	Name of the University	Opening Balance	Amount Received from PIU during the quarter	Expenditure during the quarter	Advances except secured mobilisation Advances	Closing Balance	Closing Balance as per PFMS	Fund Received during current Financial Year	Expenditures during Current Financial Year	Cumulative Fund Received	Cumulative expenditures
		71-02& Com.-1C(IG)	National Knowledge Management Centre for Agricultural Education and Research	ICAR-Indian Agricultural Research Institute, Pusa New Delhi-110012	(a)	(b)	(c)	(d)*	(e) = (a) +(b) -(c)-(d)	(f)	(g)	(h)	(i)	(j)
1	I				4663217.00	200000.00	1510265.00	1618497.00*	1734455.00	1734455.00	3844000.00	4263586.00	15357000.00	12004048.00
				Sub Total	4663217.00	200000.00	1510265.00	1618497.00*	1734455.00	1734455.00	3844000.00	4263586.00	15357000.00	12004048.00
				Grand Total	4663217.00	200000.00	1510265.00	1618497.00*	1734455.00	1734455.00	3844000.00	4263586.00	15357000.00	12004048.00

* Refund to NAHEP dated 8 March, 2021

Date: 06/04/2021

CCPI of Sub-project
Signature & stamp

DR. AMRENDER KUMAR
CCPI NAHEP (IG)
Agricultural Knowledge Management Unit
ICAR-IARI, New Delhi-110012

Asst. Administrative Office (AKMU), ICAR-IARI

सहायक प्रशासनिक अधिकारी
Asstt. Admn. Officer
सहायक प्रशासनिक अधिकारी
Asstt. Admn. Officer
कृषि ज्ञान प्रबंध इकाई
Agricultural Knowledge Management Unit
भाकृअनप–भाकृअनु संस्थान, नई दिल्ली–110012
I.C.A.R. - I. A. R. I., New Delhi-110012

07/04/2021

~~Comptroller~~ / **Finance and Accounts Officer**
Signature & stamp

सरिता महेन्द्रू
SARITA MAHENDRU
सहायक वित्त एवं लेखा अधिकारी
Asstt. Finance & Accounts Officer
भा.कृ.अनु.सं.–नई दिल्ली–12
IARI, New Delhi-12

Head of the Institution
Signature & stamp

Financial Statement of IVRI, Izzatnagar, UP

S. No.	Head of Account	Sanctioned Budget 2020-21	Opening Balance as on 01.04.2020	Grant Received during the year 2020-21	Total Available Funds	Expenditure During year (Cash Basis) 2020-21	Outstaning Advances as on 31.03.2021	Capital Savings surrendered to PIU during FY 2020-21	Closing Balance as on 31.03.2021
	Sub Total (C)	**3.0000**	**11.0462**	**2.0000**	**13.0462**	**0.6387**	**0.0000**	**0.0000**	**12.4075**
D	**Consultancy**								
12	National Level Consultancies								
	Sub Total (D)	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
E	**Recurrent Cost**								
13	Travel expenses	2.0000	2.4671	0.5000	2.9671	0.0000	0.0000	0.0000	2.96706
14	Contractual Services (RA/SRF/ System Analyst /Programmer)	18.600	8.3837	9.5100	17.8937	21.5659	0.0000	0.0000	-3.67226
15	Operational Costs	8.000	5.3294	8.0000	13.3294	7.7153	0.0000	0.0000	5.6140
16	Institutional Charges	1.4300	0.0000	1.4300	1.4300	1.4018	0.0000	0.0000	0.0282
	Sub Total (E)	**30.0300**	**16.1801**	**19.4400**	**35.6201**	**30.68303**	**0.0000**	0.0000	**4.9370**
	Revenue Expenditure Sub-total (C+D+E)	**33.0300**	**27.2263**	**21.4400**	**48.6663**	**31.3218**	**0.0000**	**0.0000**	**17.3445**
	Grand Total (A+B+C+D+E)	**50.0300**	**37.7253**	**38.4400**	**76.1653**	**42.6359**	**0.0000**	**16.1849**	**17.3446**

* Any advacnce treated as expenditure and later funds received will be reduced from that particulars expense head.
** Blank Cells to be filled only colored cells are auto calculated.
# Total Expenditure will not exceed from sanctioned budget . Excess expenditure over sanctioned budget will be disallowed. If any expenditure excess over sanctioned budget by 10% then AU should take approval from PIU NAHEP
*** Figures of IUFR and SoE must match.
Revenue/Interest Refunded to PIU may please be specified as FOOTNOTE

Date 06/04/21

07/04/2021

~~Comptroller~~ / Finance and Accounts Officer
Signature & stamp
सरिता महेन्द्रू
SARITA MAHENDRU
सहायक वित्त एवं लेखा अधिकारी
Asstt. Finance & Accounts Officer
भा.कृ.अनु.सं.–नई दिल्ली–12
IARI, New Delhi-12

06/04/21

CCPI of Sub-project
Signature & stamp
DR. A...
CCP...
Agricultural Know... ...ment Unit
ICAR-IARI, ...-110012

2

National Agricultural Higher Education Project
Project Receipts and Payments Account cum Expenditure Control sheet (For the Period 2020-21) (in Rupees)
Name of the Project: National Knowledge Management Centre for Agricultural Education and Research
Name of the University: ICAR-Indian Agricultural Research Institute, Pusa New Delhi
Component_: Innovation Grants (IG)

S. No.	Head of Account	Sanctioned Budget 2020-21	Opening Balance as on 01.04.2020	Grant Received during the year 2020-21	Total Available Funds	Expenditure During year (Cash Basis) 2020-21	Outstaning Advances as on 31.03.2021	Capital Savings surrendered to PIU during FY 2020-21	Closing Balance as on 31.03.2021
1	2	3	4	5	(4+5)=6	7	8	9	(6-7-8-9)=10
A	**Goods & Equipment**								
1	Equipment, Plant & Machinery	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	Office Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	Laboratory Equipment	17.0000	2.1606	17.00	19.1606	13.2038	0.0000	0.0000	5.9569
4	Furniture & Fixtures	0.0000	1.8193	0.0000	1.8193	0.0000	0.0000	0.0000	1.8193
5	Computers & peripherals (Hardware & Software)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	Books & Journals		0.4088	0.0000	0.4088	0.0000	0.0000	0.0000	0.4088
	Sub Total (A)	**17.0000**	**4.3887**	**17.0000**	**21.3887**	**13.2038**	**0.0000**	**0.0000**	8.1849
B	**Civil Works**								
7	Minor repairs & renovation works	0.0000	6.1104	0.0000	6.11036	-1.8896	0.0000	0.0000	8.0000
	Sub Total (B)	**0.0000**	**6.11036**	**0.0000**	**6.11036**	-1.8896	**0.0000**	**0.0000**	**8.0000**
	Capital Expenditure Sub-total (A+B)	**17.0000**	**10.4991**	**17.0000**	**27.4991**	**11.3141**	**0.0000**	**16.1849**	0.0000
C	**Human Capacity Building**								
8	National Training	3.0000	3.9997	2.0000	5.99967	0.6387	0.0000	0.0000	5.36095
9	International Training	0.0000	7.0465	0.0000	7.04653	0.0000	0.0000	0.0000	7.04653
10	Short Visits/ Seminars	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	Meetings & Workshops	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

06/04/21

07/04/2021

1

CHALLENGES FACED AND LESSONS LEARNT UNDER COMPONENT

1. Due to COVID-19 pandemic the proposed sensitization programmes were organized through online/virtual and covered all most of the AUs with good number of participation i.e. Students, Research Scholars, Faculty and Scientists.

2. A baseline survey has been conducted on implementation of Koha ILMS through Google Forms from all SAUs/CUs/DUs. The support is being provided to the Aus and their constituent colleges for installation and customization of Koha ILMS remotely.

3. Successfully organized MOOCs course in blended learning mode with huge participation. The live lectures along with recorded video lectures were well received by the participants and clarified their doubts.

MEDIA COVERAGE

कार्यों को डिजिटल माध्यम से करने पर जोर

बरेली। भारतीय पशु चिकित्सा अनुसंधान संस्थान एवं आचार्य नरेन्द्र देव कृषि विश्वविद्या
प्रौद्यौगिकी कुमारगंज आयोध्या के संयुक्त तत्वाधान में एक दिवसीय वर्चुअल सैनेटाईजेशन क
एग्रीकल्चरल नॉलेज मैनेजमेंट इन दी नेटवर्क डिजीटल इनवायरमेंट विषय पर एनएएचईपी प
राष्ट्रीय कृषि शिक्षा एवं शोध एवं कार्य प्रबन्धन केन्द्र के अधीन आयोजित की गयी। मुख्य अति
शिक्षा उपमहानिदेशक डा. आर.सी. अग्रवाल ने प्रतिभागियों के उत्साहवर्धन के साथ ही पुस
की उपयोगिता एवं शोध कार्य में तथा कोविड-19 जैसी वैश्विक महामारी के दौरान ऑनलाइ
को डिजिटल माध्यम से करने की प्राथमिकता पर बल दिया। एनएएचईपी के राष्ट्रीय समन्व
राम बाबू शर्मा, आचार्य नरेन्द्र देव कृषि एवं प्रौद्यौगिकी विश्वविद्यालय के कुलपति डा. विजे
संस्थान के संयुक्त निदेशक शैक्षणिक डा. त्रिवेणी दत्त, डा. के. विरंजलू, डा. जी रत्नासभापति
एस.एस. रावत, डा. शालिनी लिथिकर, पुस्तकालय समन्वयक डा. जी. तरू शर्मा, आयोज
डा. के.एन. काण्डपाल, डा. अमित कुमार, वरिष्ठ वैज्ञानिक डा. यशपाल सिंह उपस्थित रहे।

अमृत विचार — बरेली

कार्यशाला में देशभर से 350 लोगों ने लिया भाग

अमृत विचार, बरेली

भारतीय पशु चिकित्सा अनुसंधान संस्थान एवं असम कृषि विश्वविद्यालय, जोरहट, की ओर से एक दिवसीय लर्निंग मैनेजमेंट इन दी नेटवर्क डिजीटल इनवायरमेंट विषय पर एनएएचईपी परियोजना राष्ट्रीय कृषि शिक्षा एवं शोध एवं कार्य प्रबन्धन केन्द्र के अधीन आयोजित की गयी। इस कार्यक्रम में देश के लगभग 350 प्रतिभागियों ने जूम एप के माध्यम से अपने सहभागिता दर्ज की।

इस ऑनलाइन कार्यक्रम का शुभारंभ मुख्य अतिथि कृषि शिक्षा विभाग के उप-महानिदेशक डा. आरसी अग्रवाल ने किया। इस अवसर पर उन्होंने प्रतिभागियों के उत्साहवर्धन के साथ ही शोध कार्य में पुस्तकालय की उपयोगिता तथा कोरोना काल के दौरान कार्यों को ऑनलाइन एवं डिजिटल माध्यम से करने की प्राथमिकता पर बल दिया। उन्होंने पुस्तकालयों में इसम शिक्षा हेतु डिजिटल संसाधनों की उपयोगिता के महत्व पर प्रकाश डाला। संस्थान के कुलपति एवं निदेशक, डा. बीपी मिश्रा ने कहा कि संस्थान में प्रकाशित होने वाले शोध पत्रों को उच्च नाम रेटिंग, एच, इन्डेक्स वाली शोध पत्रिकाओं में प्रकाशित करने पर जोर दिया। साथ ही बताया कि संस्थान द्वारा विकसित मोबाइल एप एवं अन्य तकनीकें किस तरह से डिजिटल युग में अपनी महत्पूर्ण उपयोगिता को सिद्ध कर रहे हैं। इस वेबिनार में संस्थान सदस्य डा. के. विरंजलू, डा. जी रत्नासभापति, डा. अमरेन्द्र कुमार, डा. एस.एस. रावत एवं डा. के.एन. काण्डपाल ने पुस्तकालय से सम्बन्धित विभिन्न विषयों पर जूम एप के माध्यम से व्याख्यान दिये।

मौके पर विशेष अतिथि संस्थान की विभागाध्यक्ष एवं पुस्तकालय समन्वयक डा. जी. तरू शर्मा, नवासरी कृषि विश्वविद्यालय, गुजरात के प्रभारी पुस्तकालय डा. वैलाश डी. रंदेरा, डा. हरीश चन्द्र तिवारी, एच.पी. रवि कुमार आदि थे।

अमर उजाला — बरेली | शुक्रवार, 4 दिसंबर 2020

ऑनलाइन कार्यशाला के माध्यम पुस्तकालय को डिजिटल करने पर

अमर उजाला ब्यूरो

आईवीआरआई के वेबिनार में साढ़े तीन हजार प्रतिभागी जुड़े

बरेली। भारतीय पशु चिकित्सा अनुसंधान संस्थान (आईवीआरआई) एवं असम कृषि विश्वविद्यालय (जोरहाट) के संयुक्त तत्वाधान में एक दिवसीय ऑनलाइन कार्यशाला का आयोजन राष्ट्रीय कृषि शिक्षा एवं शोध व कार्य प्रबंधन केंद्र के सहयोग से आयोजित हुई। इस कार्यक्रम में देश के करीब साढ़े तीन सौ प्रतिभागी जूम एप के माध्यम से ऑनलाइन जुड़े।

कार्यक्रम का शुभारंभ मुख्य अतिथि कृषि शिक्षा विभाग के उप महानिदेशक डॉ. आरसी अग्रवाल ने किया। कुलपति एवं निदेशक डॉ. बीपी मिश्रा ने कहा कि यह वेबिनार बहुत महत्वपूर्ण है। उन्होंने संस्थान में प्रकाशित होने वाले शोध पत्रों और पत्रिकाओं को प्रकाशित करने पर जोर दिया।

विशिष्ट अतिथि भारतीय कृषि अनुसंधान परिषद के डॉ. राम बाबू विश्वविद्यालय के कुल विद्युत चंदन डेका ने पुस्त आधुनिक बनाने पर ज वेबिनार में संकाय सदस्य डॉ. के विरंजलू, डॉ. सभापति, डॉ. अमरेंद्र कु एसएस रावत, डॉ. केएन क

आज — बरेली, 4 दिसम्बर 2020

आईवीआरआई में वर्चुअल सेंसटाईजेशन कार्यशाला आयोजित

अमर उजाला — बरेली | मंगलवार, 23 मार्च 2021 — 8

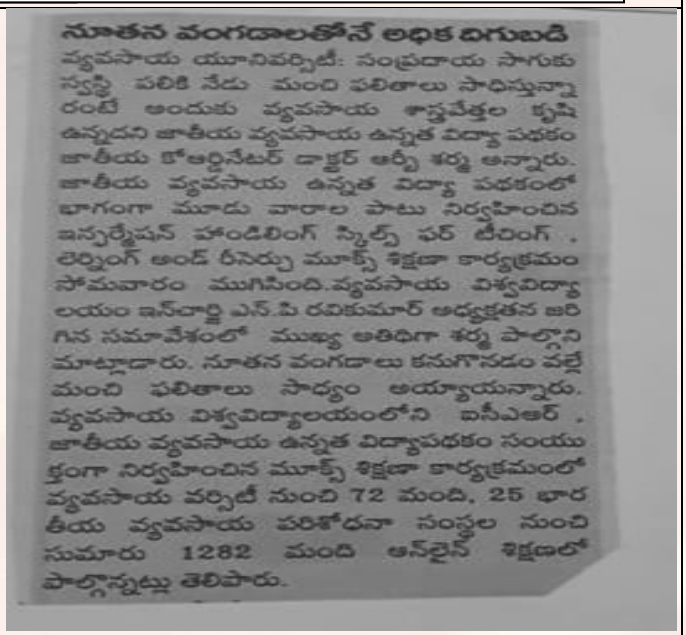
तकनीक के प्रयोग से बढ़ेगी पुस्तकालय की जरूरत

अमर उजाला ब्यूरो

लाइब्रेरी प्रोफेशनल ने ऑनलाइन प्रतिभाग कर तकनीक की जानकारी दी

बरेली। आईवीआरआई में सोमवार को दो दिवसीय ऑनलाइन नेशनल लेवल ट्रेनिंग प्रोग्राम का आयोजन हुआ। राष्ट्रीय कृषि शिक्षा, शोध एवं कार्य प्रबंधन केन्द्र के तत्वाधान में 'ओपन सोर्स लाइब्रेरी मैनेजमेंट सिस्टम (कोहा) और एग्रीकल्चरल नॉलेज मैनेजमेंट' विषय परआयोजित कार्यक्रम में देश के आठ जानेमाने लाइब्रेरी प्रोफेशनल प्रतिभागियों ने भाग किया।

शुभारंभ मुख्य अतिथि कृषि शिक्षा विभाग के उप महानिदेशक डॉ. आरसी अग्रवाल ने किया। उन्होंने शोध कार्य में पुस्तकालय की उपयोगिता और कोविड-19 वैश्विक महामारी के दौरान कार्यों को ऑनलाइन करने पर जोर दिया। पुस्तकालयों में उपयोग आने वाले ओपन सोर्स सॉफ्टवेयर 'कोहा' की जरूरत बताई। साथ ही ओपन सोर्स एवं फ्री/ओपन सॉफ्टवेयर की भी वार्तालाप से जानकारी दी। संस्थान के कुलपति एवं निदेशक डॉ. बीपी मिश्रा ने एनएईचईपी परियोजना की गतिविधियों की जानकारी दी। विशिष्ट अतिथि एनएएचईपी के राष्ट्रीय समन्वयक, भारतीय कृषि अनुसंधान परिषद के डॉ. राम बाबू शर्मा ने परियोजना के बेहतर संचालन के लिए सीसीपीआई डॉ. केएन कॉन्फ्रेंस के प्रयास को सराहा। पुस्तकालयों में नई तकनीक के प्रयोग की जानकारी दी। एनआईटी के लाइब्रेरियन डॉ. के विरंजलू ने ड्रोन जैसी तकनीक का पुस्तकालय में बढ़ती उपयोगिता पर प्रकाश डाला। ऑनलाइन प्रोग्राम में सीसीएयू लखनऊ के एसोसिएट प्रोफेसर डॉ. शरद सोनकर, राहुल सक्सेना, पुस्तकालय प्रभारी एसएस रावत, डॉ. जी रत्नासभापति आदि मौजूद रहे।



నూతన వంగడాలతోనే అధిక దిగుబడి

వ్యవసాయ యూనివర్సిటీ: సంప్రదాయ సాగుకు స్వస్తి పలికి నేడు మంచి ఫలితాలు సాధిస్తున్నా రంటే అందుకు వ్యవసాయ శాస్త్రవేత్తల కృషి ఉన్నదని జాతీయ వ్యవసాయ ఉన్నత విద్యా పథకం జాతీయ కోఆర్డినేటర్ డాక్టర్ ఆర్వీ శర్మ అన్నారు. జాతీయ వ్యవసాయ ఉన్నత విద్యా పథకంలో భాగంగా మూడు వారాల పాటు నిర్వహించిన ఇన్సర్వీసెస్ హాండిలింగ్ స్కిల్స్ ఫర్ టీచింగ్, లెర్నింగ్ అండ్ రీసెర్చ్ మూక్స్ శిక్షణా కార్యక్రమం సోమవారం ముగిసింది. వ్యవసాయ విశ్వవిద్యాలయం ఇన్‌చార్జి ఎన్.పి రవికుమార్ అధ్యక్షతన జరిగిన సమావేశంలో ముఖ్య అతిథిగా శర్మ పాల్గొని మాట్లాడారు. నూతన వంగడాలు కనుగొనడం వల్లే మంచి ఫలితాలు సాధ్యం అయ్యాయన్నారు. వ్యవసాయ విశ్వవిద్యాలయంలోని ఏసీఎఆర్, జాతీయ వ్యవసాయ ఉన్నత విద్యాపథకం సంయుక్తంగా నిర్వహించిన మూక్స్ శిక్షణా కార్యక్రమంలో వ్యవసాయ వర్సిటీ నుంచి 72 మంది, 25 భారతీయ వ్యవసాయ పరిశోధనా సంస్థల నుంచి సుమారు 1282 మంది ఆన్‌లైన్ శిక్షణలో పాల్గొన్నట్లు తెలిపారు.

ఆన్‌లైన్ అభ్యాసనపై విద్యార్థుల ఆసక్తి

జాతీయ వ్యవసాయ ఉన్నత విద్యా పథకం కోఆర్డినేటర్ డాక్టర్ శర్మ

ఏజీ యూనివర్సిటీ: ఆధునిక సాంకేతిక పరిజ్ఞానం అభివృద్ధి చెందిన ప్రస్తుత తరుణంలో ఆన్‌లైన్ అభ్యాసన వైపు విద్యార్థులు, అధ్యాపకులు ఆసక్తి కనపరుస్తున్నారని జాతీయ వ్యవసాయ ఉన్నత విద్యా పథకం కోఆర్డినేటర్ డాక్టర్ శర్మ అన్నారు. జాతీయ వ్యవసాయ ఉన్నత విద్యాపథకంలో భాగంగా రాజేంద్రనగర్‌లోని వ్యవసాయ విశ్వవిద్యాలయంలో మూడు వారాలపాటు నిర్వహించిన 'ఇన్ఫర్మేషన్ స్కిల్స్ ఫర్ టీచింగ్, లెర్నింగ్ అండ్ రిసెర్చ్'పై జరిగిన శిక్షణా కార్యక్రమం సోమవారంతో ముగిసింది. వర్సిటీ రిజిస్ట్రార్ డాక్టర్ సుధీర్‌కుమార్, డీన్ ఆఫ్ అగ్రికల్చర్ డాక్టర్ సీమ, లైబ్రేరియన్ రవికుమార్, డాక్టర్ రత్న తదితరులు పాల్గొన్నారు.

మూక్స్ శిక్షణ ప్రారంభం

ఏజీ యూనివర్సిటీ: ప్రొఫెసర్ జయశంకర్ తెలంగాణ రాష్ట్ర వ్యవసాయ విశ్వవిద్యాలయంలో సోమవారం ఇన్ఫర్మేషన్ హ్యాండిలింగ్ స్కిల్స్ ఫర్ లెర్నింగ్ అండ్ రీసెర్చ్‌పై రెండో దశ మూక్స్(మాసివ్ ఓపెన్ ఆన్‌లైన్ కోర్సు)శిక్షణను విశ్వవిద్యాలయం వీసీ డాక్టర్ ప్రవీణ్‌రావు ప్రారంభించారు. ఈ కార్యక్రమంలో భారతీయ వ్యవసాయ పరిశోధనా మండలి డిప్యూటీ డైరెక్టర్ జనరల్ (ఎడ్యుకేషన్) న్యూఢిల్లీ డాక్టర్ ఆర్సీ అగర్వాల్, నేషనల్ కో ఆర్డినేటర్ డాక్టర్ ఆర్‌బి. శర్మ, విశ్వవిద్యాలయం ఇన్‌చార్జి లైబ్రేరియన్ రవికుమార్, డాక్టర్ రామరావు, డాక్టర్ అనిత, డాక్టర్ జగదీశ్వర్ తదితరులు పాల్గొన్నారు.

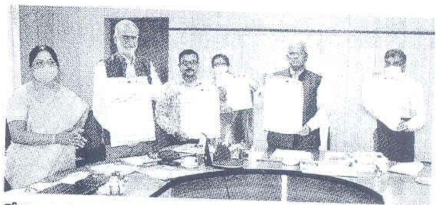
IN BRIEF

Online course from ICAR-PJTSAU

HYDERABAD

Professor Jayashankar Telangana State Agricultural University (PJTSAU) has launched the phase-two of Massive Open Online Course (MOOC) on "Information Handling Skills for Teaching, Learning and Research" here on Monday under ICAR-National Agricultural Higher Education Project (IG). Deputy Director General of ICAR and National Director of ICAR-NAHEP R.C. Agarwal, national coordinator R.B. Sharma and Vice-Chancellor of PJTSAU V. Praveen Rao participated in the launch programme. Registration for the online course could be done till March 6 and the classed for the three-week course would commence from March 1.

నూతన విద్యా విధానంపై | రెండో దశ శిక్షణ షురూ



కోర్సుల వివరాలను ఆవిష్కరిస్తున్న ఉప కులపతి డా॥ ప్రవీణ్ రావు తదితరులు

వ్యవసాయ యూనివర్సిటీ: ఇన్‌ఫర్మేషన్ హ్యాండ్లింగ్ స్కిల్స్ ఫర్ టీచింగ్, లెర్నింగ్ అండ్ రీసెర్చ్‌పై రెండో దశ మ్యూక్స్ (మాసివ్ ఓపెన్ ఆన్‌లైన్) కోర్స్ శిక్షణ కార్యక్రమాన్ని సోమవారం ప్రొ॥ జయశంకర్ తెలంగాణ రాష్ట్ర వ్యవసాయ విశ్వవిద్యాలయం ఉప కులపతి డా॥వి.ప్రవీణ్ రావు ప్రారంభించారు. ఐసీఏఆర్–ఎన్‌హెచ్‌ఈపీ నేషనల్ డైరెక్టర్, భారతీయ వ్యవసాయ పరిశోధన మండలి డిప్యూటీ డైరెక్టర్ జనరల్ (ఎడ్యుకేషన్) న్యూఢిల్లీ, డా॥ఆర్.సి.అగర్వాల్, నేషనల్ కో ఆర్డినేటర్ డా॥ ఆర్బీ శర్మతో పాటు కలిసి ప్రారంభించారు. వర్చ్యువల్ పద్ధతిలో ఈ కార్యక్రమం జరిగిందన్నారు. ఆయన మాట్లాడుతూ ప్రస్తుత పరిస్థితులలో నేరుగా వచ్చి నేర్చుకునే పరిస్థితి లేకపోవడం, సమయం వృథా కాకూడదనే ఉద్దేశంతో ఈ నిర్ణయం తీసుకున్నట్లు తెలిపారు. నాలెడ్జ్ మేనేజ్‌మెంట్‌లో భాగంగా వివిధ విశ్వవిద్యాలయాలు ఒకరికొకరు పరస్పర సహకారంతో పని చేయాలని సూచించారు. కోవిడ్ తర్వాత నాలెడ్జ్ మేనేజ్‌మెంట్‌తో పాటు ఆన్‌లైన్ ప్రాధాన్యత పెరిగిందన్నారు.

నూతన విద్యావిధానంలో అధ్యాపకులు ఆన్‌లైన్ ఎడ్యుకేషన్ చేపట్టేలా ప్రోత్సహిస్తుందని తెలిపారు. విశ్వవిద్యాలయ ఇన్‌చార్జి, లైబ్రేరియన్ ఎన్‌పీ రవికుమార్, డా॥ రామారావు, డా॥ అనిత, ఆర్.జగదీశ్వర్‌తో పాటు పలువురు వర్చ్యువల్ విధానంలో పాల్గొన్నారు.

ముగిసిన శిక్షణ శిబిరం

రాజేంద్రనగర్, న్యూస్‌టుడే: కరోనా నేపథ్యంలో ఆన్‌లైన్ శిక్షణకు ప్రాధాన్యత పెరిగిందని జాతీయ వ్యవసాయ ఉన్నత విద్యా కో ఆర్డినేటర్ డాక్టర్ బీఆర్ శర్మ అన్నారు. జాతీయ వ్యవసాయ ఉన్నత విద్యా పథకంలో భాగంగా మూడు వారాలపాటు 'ఇన్ఫర్మేషన్ హ్యాండలింగ్ స్కిల్స్ ఫర్ టీచింగ్, లెర్నింగ్ అండ్ రీసెర్చ్' అనే అంశంపై నిర్వహించిన శిక్షణ కార్యక్రమం సోమవారం ముగిసింది. ముగింపు సమావేశానికి హాజరైన డాక్టర్ బీఆర్ శర్మ మాట్లాడారు. ప్రొఫెసర్ జయశంకర్ వ్యవసాయ విశ్వవిద్యాలయం, భారత వ్యవసాయ పరిశోధనమండలి(ఐసీఏఆర్), జాతీయ వ్యవసాయ ఉన్నత విద్యాపథకం సంయుక్తంగా నిర్వహించిన ఈ శిక్షణ కార్యక్రమంలో 72 వ్యవసాయ విశ్వవిద్యాలయాలు, 25 భారతీయ వ్యవసాయ పరిశోధనా సంస్థల నుంచి మొత్తం 1,282 పాల్గొన్నారని నిర్వాహకులు తెలిపారు. వర్సిటీ రిజిస్ట్రార్ డాక్టర్ సుధీర్‌కుమార్, ఎన్.పీ. రవికుమార్, డాక్టర్ జి.రత్న సభాపతి తదితరులు పాల్గొన్నారు.