



## **Institutional Development Plan (IDP)**

**“Incentivizing Dairy Education through Innovative Learning Approaches”**

**National Agricultural Higher Education Project  
(NAHEP)**

**Progress Report (April 2020–March 2021)**

**Submitted by**

**ICAR-National Dairy Research Institute  
Karnal, Haryana-132001**

## Table of Contents

<b>S.No.</b>	<b>Content</b>	<b>Page No.</b>
1.	Executive Summary	3
2.	Component 1a	4-33
3.	Disclaimer	33-34

## 1.0 Executive Summary

### **Project Objective:**

The institute has proposed 'Institutional Development Plan' with the objective to strengthen its academic programs by introducing industry-oriented course modules with e-learning outcome centric approach to make it more relevant to the stakeholders of the industry and farming community. It also proposes to leverage its strong alumni base located in leading industries and academic institutions across the world to enrich its programs and mentor the students to be globally competitive. Exploring opportunities for engagement with researchers and academia based at leading world universities through student exchange, twinning/sandwich/dual degree programs and on campus mentoring for international exposure of the students remain one of the thrust areas of the IDP. The IDP for the institute also lays great emphasis on nurturing the soft skills of the student and offering them ecologically sustainable and vibrant campus life for overall development of their personality which are so critical for employability. The institute has also built-in strong provisions for equity action plan for disadvantaged students and proposes to engage communities and stakeholders to discharge its social responsibilities very responsibly. Finally, through successfully implementing the activities listed in the IDP, the institute aspires to emerge as an institute of global repute.

**Component 1a:** Support to Institutional Development Plan (IDP) of Agricultural University: NDRI's IDP has the title "Incentivizing Dairy Education through Innovative Learning Approaches" and has been sanctioned initially for a period of 03 years i.e. from FY 2018-19 to 2020-21. Annual Progress reports for the years 2018-19 and 2019-20 have already been submitted to ICAR, NAHEP unit. The following sections of this report illustrate activities carried out during the Financial year 2020-21. Moving along with Novel covid 19 pandemic, it was a bit hard to maintain the teaching & learning pace. However, without compromising to difficult situations, IDP-NAHEP Cell of NDRI had conducted several webinars in the areas of professional skill development, leadership qualities, women empowerment, pedagogical skills, advances in dairying, etc. to help our students and faculty to progress in their academic activities and research career. A total 17 webinars were organized during the year 2020-21 for the benefit of students and faculty. Webinar's like "Decoding the Secrets of Agri-Dairy Sector towards Self Employment" where also conducted to motivate the students towards self-employment. International workshops/webinars on advanced scientific topics have also been conducted with the help of Globally reputed subject matter specialists from USA, New Zealand, Australia and Europe to improve the skill sets of the students and faculty.

## 2.0 Component 1 a

Support to Institutional Development Plan (IDP) of Agricultural Universities

Component cost  
USD 69.4 Mn

### 2.1 Output-outcome monitoring

S.No.	Particulars	April'20 to March'21		
		Plan	Achievement	Progress made during period (Elaboration)
1.	Number of new facilitative units established to enable academic and research infrastructure (IIC- Industry Institution Interaction Cell / Start up cell / incubation cell / experiential learning unit / placement cell etc.)	02	02	<ul style="list-style-type: none"> <li>• Language Lab</li> <li>• International Relations Cell</li> </ul>
2.	Number of pilot courses added/upgraded on communication skills, entrepreneurial skills, information processing, creative and innovative thinking, leadership skills, industry-oriented courses etc.	10	20 Completed	<ul style="list-style-type: none"> <li>• Advanced statistical techniques viz. Principal Component analysis, Factor analysis, Advanced data wrangling, etc.</li> <li>• Food Safety: Nanotechnology to improve the food safety measures.</li> <li>• Entrepreneurial topics viz. Decoding Secrets of Agri-Dairy Sector: Towards Self Employment.</li> <li>• Soft skills development topics.</li> <li>• Advanced Characterization of Food and dairy based products through Rheology and Tribology.</li> <li>• Advances in Application of Membrane Processing in Dairy and Food Industry.</li> <li>• Metabolomics and Proteomics in Food Science.</li> <li>• Trends in Food Packaging: Active and intelligent packaging.</li> <li>• Digestion Behavior of Milk:</li> </ul>

				<p>New techniques/instruments to unravel the digestion behavior of milk and milk products.</p> <ul style="list-style-type: none"> <li>• Recent advances in the processing of high-value dairy products.</li> <li>• Structures and digestion of milk and milk products.</li> </ul>
3.	Additional revenue generated through institutional activities with industries (in INR lakhs)	30	2.60815	This was generated from Contract Services
4.	Revenue generated through public usage of infrastructure for academic activities in INR lakhs	188	4.39596	<ul style="list-style-type: none"> <li>• 03 Student trainings were conducted in which Rs. 26,550/- Lakhs revenue was generated.</li> <li>• One General Consultancy Service was provided in which Rs. 4,13,046/- Lakhs revenue was generated</li> </ul>
5.	Number of MoUs signed with industry for knowledge exchange programs/internships/short-term training programs etc.	03	0	
6.	Number of faculty exchange programmes (both national and international) initiated by Agricultural university.	06	07	Seven faculty members successfully completed training at 6 different universities located in USA & Netherlands.
7.	Number of student exchange programmes (both national and international) initiated by Agricultural University	40	0	Due to COVID pandemic, student training in physical mode could not be conducted.

## 2.2 Input and activity monitoring

Input/Activity indicator	Sub-head/category	Expenditure/input in INR Lakhs		Justification
		Planned	Utilization	
Goods and equipment	Equipment, Plant & Machinery	0	0	
	Office equipment	4.26	2.24946	
	Laboratory equipment	294.30	179.93738	
	Furniture & fixtures	5	0	

	Computers and Peripherals	50.82	41.61850	
	Books and Journals	0	0	
Civil works	Minor repair and renovation work	150	0	
Human capacity building	National level training	0		
	International level training	154.97	11.75178	
	Short visit/seminars	19.35	2.07094	
	Meetings and workshops	20.38	0	
Consultancy	National level consultancies	21.27	0	
Recurrent cost / Miscellaneous	Travel	4.84	0.32417	
	Contractual services	168.81	68.38582	
	Operational costs	599.72	75.53708	
	Institutional charges	40.99	19.42743	
<b>Total</b>		<b>1534.77</b>	<b>401.30256</b>	

### 2.3 Challenges faced and lessons learnt under Component 1a

1	During the FY 2020-21, procurement activities could not be materialized due to Covid-19 Outbreak and activities also got delayed due to the same.
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### 2.4 Plan ahead (Key activities) for next reporting period

S.No.	Proposed Activity	Budget (~Rs. Lakhs) likely to be spent
1.	Overseas Internship of UG students (50-60 No's)	150
2.	Virtual & augmented reality models for UG teaching (3 modules)	100
3.	Skill development courses: soft skill lecture/training series, languages (German, Spanish, French)	10
4.	MOOCs (05 Courses)	50
5.	Virtual training in emerging areas of dairy and food science (04 different areas)	10
6.	International and National webinars (regular basis)	15
7.	Offering stakeholder need based courses through Coursera, etc.	05
8.	Visiting Professorship of Foreign Faculty	50

9.	Overseas Internship of PG & PhD students	200
<b>Total</b>		<b>590</b>

### 2.5 Support to Institutional Development Plan (IDP) of AUs (Component cost USD 69.4 Mn)

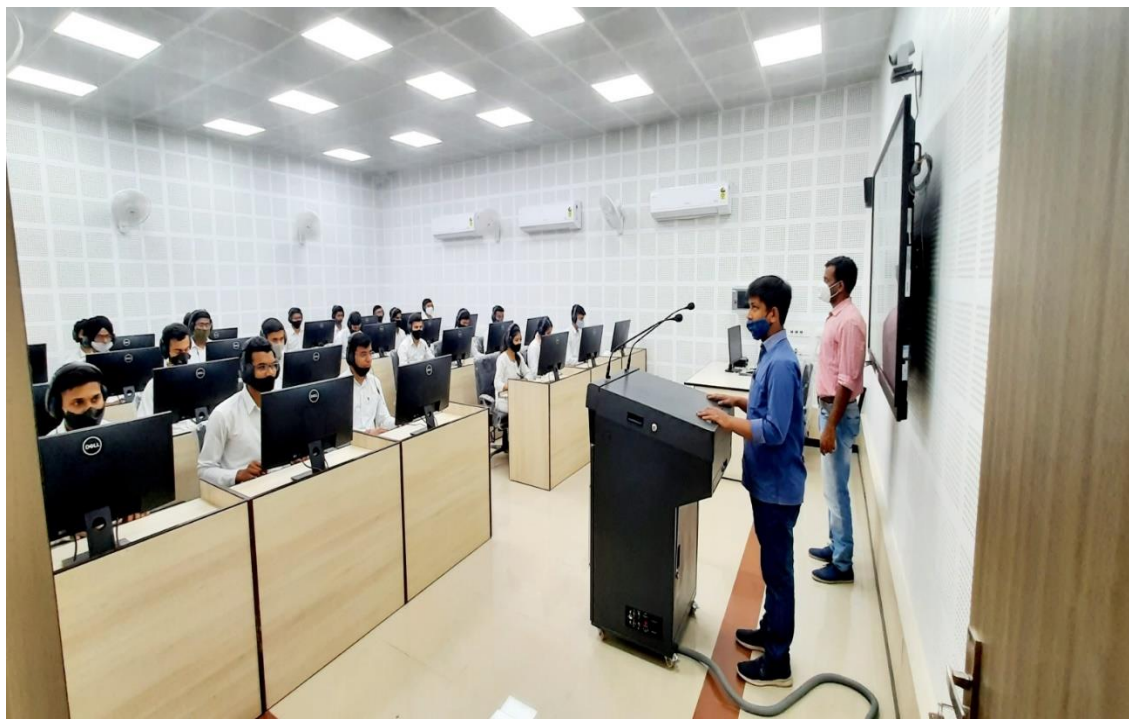
S.No.	Particulars	April'20 to March'21		
		Plan	Achievement	Progress made during period
1.	Number of faculty exchange programmes (both national and international) initiated by AU	06	07	Seven faculty members successfully completed training at 6 different universities located in USA & Netherlands.
2.	Number of student exchange programmes (both national and international) initiated by AU	40	0	Due to COVID pandemic, student training in physical mode could not be conducted.
3.	Number of technologies transferred to industry / private sector / national / international organizations	20	07	A total of seven technologies of worth 16.10 Lakhs (excluding GST 18%) were transferred to 06 different Industries.
4.	Number of students selected in JRF / SRF / ARS	-	62	A total of 62 students have been selected in JRF/SRF/ARS (30 JRF + 21 SRF + 11 ARS).
5.	Number of students who were admitted in foreign universities.	-	07	A total of 07 students were admitted in 05 different foreign universities (The Netherlands and USA) for pursuing MS.
6.	Number of students received National Young Scientist Award	NA	10	A total of 10 students have been awarded National Young Scientist Award by different agencies/organizations.
7.	Number of students received ICAR's Jawaharlal Nehru thesis Award	NA	01	One Student has been awarded Jawaharlal Nehru thesis Award in the discipline of Animal Biochemistry.
8.	Number of students awarded at Agri-unifest	-	-	Due to Covid-19 pandemic no Agri-fest could be organized.
9.	Number of students awarded at Agricultural University Sports Meet	-	-	Due to Covid-19 pandemic no sports meet could be organized.
10.	Number of industry-sponsored projects and	5	08	A total of 08 Contract research projects from 08 different Industries

	positions in cutting-edge areas of Agri-science			were handled by NDRI. A total of ~72 lakh rupees were generated through these projects.
11.	Number of competitive grants from a national/international funding agency	-	09	A total of 09 externally funded projects were awarded to NDRI from 08 funding agencies. The total fund received during the year FY 2020-21 from these funding agencies was ~ Rs. 9.5 Crores.
12.	Number of technologies commercialized by AU	20	07	A total of seven technologies of worth 16.10 Lakhs (excluding GST 18%) were transferred to 06 different Industries.



## Photographs of various activities conducted by IDP, ICAR-NDRI, Karnal during FY 2020-21

**Facilitative Units Established:** Language lab is established to teach students various foreign languages viz. French, Spanish, German. Also, several advanced softwares were procured to improve the English speaking skills of the students.



**Fully Furnished Language Lab**

## Webinars/Workshops Conducted:



# WEBINAR ON INFORMATION SECURITY (IDP-NAHEP, ICAR-NDRI)

**June 6, 2020 (10:00 AM onwards)**

A webinar on "Information Security" is being organised for students of the institute under IDP, NAHEP. Information Security is of utmost importance in this digital era as data is a supreme asset for organizations. The information security has many aspects including physical security, security by digital means and through trained manpower. Cyber terrorism and warfare is also emerging as weapon of choice for some countries as crypto currency is gaining ground in commercial transactions. This webinar would enable the students to get insights on emerging cyber threats, cyber forensics, cyber laws and concepts of information security for their personal data management and skills for career development.

**Applications:**

- Management of personal and organizational data and information
- Identification of cyber security breach incidents in real life
- Identify and thwart attack of hackers & viruses
- Understanding of finance related cyber crimes
- Understanding of cyber laws prevailing in the country
- Management of cyber threats in organizations when employed

**Contents:**

- Threat landscape: terminology, cyber security threats, keeping up to date
- Authentication: access control, passwords, two-factor authentication
- Malware: types of malware, attack vectors, preventing infection
- Cryptography: symmetric and asymmetric cryptography and its applications
- Networking and communications related threats
- Components of network security: firewalls, virtual private networks, intrusion detection / prevention
- Cyber security laws
- Recovering from cyber attacks
- Managing security risks: risk analysis and management
- Implementation and management of information security in organizations

**Speakers:**

 <p><b>Dr. Gurcharan Singh</b> Central Detective Training Institute MHA, Chandigarh</p>	 <p><b>Dr. Himanshu</b> Senior Scientist ICAR, New Delhi</p>	 <p><b>Dr. Anurag Jain</b> Associate Professor IP University</p>
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**Organiser:** Dr. AP Ruhil, Principal Scientist, Computer Centre, NDRI, Karnal | **Mobile:** 7838111901  
**Patron:** Dr. SK Tomar, Principal Scientist & PI, NAHEP, NDRI | **Chief Patron:** Dr. MS Chauhan, Director, NDRI  
**Webinar registration link:** <https://us02web.zoom.us/join/9tjv6t2kz9>

ICAR-NDRI has organized a webinar on "Information Security" under IDP, NAHEP project on June 6, 2020. The webinar included a series of lectures by Dr. Gurcharan Singh, Faculty Member, Central Detective Training Institute, MHA, Chandigarh, Dr. Himanshu, Senior Scientist, ICAR, New Delhi, and Dr. Anurag Jain, Associate Professor, IP University.

## Our Speakers



**Mr. N. Raghuraman**  
Editor, Writer, Life Coach  
Columnist & Engagement  
Specialist



**Mr. Nirmal Bhatnagar**  
Motivational Speaker &  
Facilitator, Educational  
Consultant, Career  
Counsellor



**Mr. Srijan Pal Singh**  
Author, Social Entrepreneur  
and Former Advisor to  
Dr. APJ Abdul Kalam  
TEDx Speaker





**Dr. M.S. Chauhan**  
Director  
ICAR-National Dairy  
Research Institute, Karnal

- ◆ Entrepreneurship
- ◆ Self Reliance
- ◆ Leadership
- ◆ Crisis to Boom

## Decoding Secrets of Agri-Dairy Sector: Towards Self Employment

Organized & Supported by:

Institutional Development Plan (IDP)  
National Agricultural Higher Education Project (NAHEP)



**ICAR-National Dairy Research Institute  
(Deemed University), Karnal**



NATIONAL  
WEBINAR

09 JUNE 2020

10:30 AM - 12:30 PM



Zoom Link

https://us02web.zoom.us/j/83835696993



#NDRITalks



<https://www.youtube.com/c/DreamsAchievers>

ICAR-NDRI has organized a webinar on “**Decoding Secrets of Agri-Dairy Sector: Towards Self Employment**” under IDP, NAHEP project on June 9, 2020. The webinar included a series of lectures by **Mr. N. Raghuraman** Editor, Writer, Life Coach Columnist & Engagement Specialist, **Mr. Nirmal Bhatnagar** Motivational Speaker & Facilitator, Educational Consultant, Career Counselor and **Mr. Srijan Pal Singh** Author, Social Entrepreneur and Former Advisor to Dr. APJ Abdul Kalam & TEDx Speaker.



\* WEBINAR \*

Wednesday, June 10, 2020  
10:30 AM to 12:30 PM



Dr. M.S. Chauhan  
Director  
ICAR-National Dairy  
Research Institute, Karnal

**How to design your  
life in 5 years**



**By Rajesh Aggarwal**  
Business thinker, Author and  
Motivational Speaker

**Fundamentals of  
Goal Setting**



**By Nirmal Bhatnagar**  
Educational Consultant,  
Motivational Speaker, Facilitator  
and Career Counsellor

**World and Business  
after Covid 19**



**By N. Raghuraman**  
Author, Life Coach, Columnist  
and Engagement Specialist

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National Agricultural Higher Education Project (NAHEP)**



**ICAR-National Dairy Research Institute  
(Deemed University), Karnal**



**Zoom Link**

<https://us02web.zoom.us/j/88975352339>



**#NDRItalks**



<https://www.youtube.com/c/DreamsAchievers>

INTECH-80539 70111

ICAR-NDRI has organized a webinar on three different topics “**How to design your life in 5 years**”, “**Fundamentals of Goal Setting**” and “**World and Business after COVID 19**” under IDP, NAHEP project on June 10, 2020.



**Mr. N. Raghuraman**  
Editor, Writer, Life Coach  
Columnist & Engagement  
Specialist



**Dr. M.S. Chauhan**  
Director  
ICAR-National Dairy  
Research Institute, Karnal

**NDRI  
TALKS**



**TOPIC -**

## **BRIDGING THE GAP** (BETWEEN EDUCATION AND INDUSTRY)

**BY MR. RATNAKAR C CHOUDHARY**  
MD, CRASHOLA

**DATE - 11 JUNE 2020**  
**TIME - 10.30 AM**

*Organized & Supported by:*

**Institutional Development Plan (IDP)**  
**National Agricultural Higher Education**  
**Project (NAHEP)**

**Zoom Link**

<https://us02web.zoom.us/j/87286850832>



<https://www.youtube.com/c/DreamsAchievers>



ICAR-NDRI has organized a webinar on “**Bridging the Gap Between (Education and Industry)**” under IDP, NAHEP project on June 11, 2020. The webinar included a series of lectures by **Mr. Ratnakar C. Choudhary (MD), Crashola.**



★ WEBINAR ★

Thursday, June 18, 2020

Time : 11:00 AM



Dr. M.S. Chauhan  
Director  
ICAR-National Dairy  
Research Institute, Karnal



Dr. Pratima Khandelwal, *Ph.D*  
Pedagogue & National level Educator  
Translating 20 years of teaching excellence to  
empower the teachers

## Skill Sets for Hybrid Teaching and Learning in Post COVID Era

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National Agricultural Higher Education Project (NAHEP)



ICAR-National Dairy Research Institute  
(Deemed University), Karnal



Zoom Link 

<https://us02web.zoom.us/j/83217173949>

INTECH-80559 70111

ICAR-NDRI has organized a webinar on “Skill Sets for Hybrid Teaching and Learning in Post COVID Era” under IDP, NAHEP project on June 18, 2020. The webinar was delivered by Dr. Pratima Khandelwal, Pedagogue & National level Educator.



NAHEP



## SOFT SKILLS GAINED DURING MY JOURNEY WITH NDRI

June 20, 2020 (4:00 to 5:30 PM)

Alumnus of ICAR-NDRI (B.Sc. Dairy Technology, 1984-88). He has worked with Office Automation (HCL Group), Telecom (Vodafone, Bharti British Telecom), Telecom Infrastructure (Comverse), IT/ITES (Oberthur/Idemia) in a career spanning more than 29 years. For the last 15 years, he has been working in leadership position and managing international companies.

### Speaker



#### Mr. Atul Jain

Managing Director for Indian  
Subcontinent & Middle East, DZ Card.

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National Agricultural Higher Education Project (NAHEP)  
**ICAR-National Dairy Research Institute**  
(Deemed University), Karnal

Webinar Zoom Link: <https://us02web.zoom.us/j/88954380095>

ICAR-NDRI has organized a webinar on “Soft skills gained during my journey with NDRI” under IDP, NAHEP project on 20<sup>th</sup> June 2020. The webinar was delivered by **Mr. Atul Jain** (Managing Director for Indian Subcontinent & Middle East, DZ Card), an Alumnus of NDRI.



NAHEP



# PRIMER FOR ONLINE DATA ANALYTICS COURSE

4<sup>th</sup> July 2020 (4:00-5:30 PM)

## SPEAKER



### Prof. Uday Bhate

Consultant, Research and Data Analytics

Prof. Uday Bhate is an Alumnus of NDRI, Karnal (BSc Dairy Technology, 1975-79). He holds a Post Graduate Diploma in Management from Indian Institute of Management (IIM), Ahmedabad.

Prof. Uday Bhate is a consultant specialising in providing consulting services to industry in research and data analytics. He also teaches at various business schools and trains practitioners from the industry. He is an invitee to various conferences on Research and Analytics. He has been associated as visiting faculty with several esteemed business schools in India and abroad. He has assisted several Research Scholars in their Doctoral thesis and mentored several start-ups. He is also on the editorial board of a couple of journals published by academic institutions. Since 2004, Prof. Bhate has been the Managing Partner and co-founder of nmore, a strategic advising firm offering research-based solutions.

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National Agricultural Higher Education Project (NAHEP)  
ICAR-National Dairy Research Institute  
(Deemed University), Karnal**

**Webinar Zoom Link:** <https://us02web.zoom.us/j/86546760539>

A webinar arranged on “**Primer for online data analytics course**” has been organized on July 4, 2020. This webinar included a presentation by Prof. Uday Bhate (Consultant, Research and Data Analytics), an Alumnus of NDRI.





**NAHEP**



**“HIGHER EDUCATION OPPORTUNITIES IN  
MANAGEMENT FOR DAIRY TECHNOLOGY  
STUDENTS, MBA IN INDIA AND ABROAD”**

**July 09, 2020 (4:00 – 5:30 PM)**

**Speaker**



**Sh. Ajay Zener**

**Mentor and Career launcher**

Sh. Ajay Zener is an alumnus of NDRI, Karnal (B.Tech. Dairy Technology, 1994-1998). He holds an MBA degree from Indian Institute of Management (IIM), Ahmedabad. During the early years of his professional career, Sh. Zener has worked in more than 13 countries for several multinational companies viz. Cadbury India Limited, Perfetti, Olam and UST Global. Since 2009, he has been working as a Mentor and Career launcher. He worked extensively with corporates and has handled corporate training for more than 100 organizations. Till date, Sh. Zener has mentored more than 5000 students to top Universities in the world.

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ICAR-National Dairy Research Institute  
(Deemed University), Karnal**

**Webinar Zoom Link:** <https://us02web.zoom.us/j/89309308337>

A webinar on “**Higher Education Opportunities in Management for Dairy Technology Students, MBA in India and Abroad**” was organized on July 9, 2020 under IDP, NAHEP project. This webinar included a presentation by Sh. Ajay Zener (Mentor and Career Launcher), an Alumnus of NDRI.



# NAHEP



## Workshop on Data Analytics

— 29<sup>th</sup> October – 10<sup>th</sup> November, 2020 —

An online workshop on 'Data Analytics' is being organized for the students of ICAR-NDRI under the aegis of IDP-NAHEP project. The topics covered during the workshop includes cluster analysis, factor analysis, regression & discriminant analysis and multi-dimensional scaling.

### Time Schedule

Date	Session Topic	Date	Session Topic
29 <sup>th</sup> Oct. 2020	Pre-workshop activities and Installation of Statistical Software	5 <sup>th</sup> Nov. 2020	ANOVA: One-way & Two-way
30 <sup>th</sup> Oct. 2020	Overview of Software	6 <sup>th</sup> Nov. 2020	Regression
31 <sup>st</sup> Oct. 2020	Basic Data Wrangling	7 <sup>th</sup> Nov. 2020	Cluster analysis - Hierarchical
2 <sup>nd</sup> Nov. 2020	Advanced Data wrangling	9 <sup>th</sup> Nov. 2020	Cluster analysis - K Means
3 <sup>rd</sup> Nov. 2020	Cross Tabulation	10 <sup>th</sup> Nov. 2020	PCA / Factor analysis
4 <sup>th</sup> Nov. 2020	T-Test, Paired sample, Independent sample		

### Speaker : Prof. Uday Bhate

Prof. Uday Bhate is an Alumnus of NDRI, Karnal (BSc Dairy Technology, 1975- 79). He holds a Post Graduate Diploma in Management from Indian Institute of Management (IIM), Ahmedabad. Prof. Uday Bhate is a consultant specialising in providing consulting services to industry in research and data analytics. He also teaches at various business schools and trains practitioners from the industry. He is an invitee to various conferences on Research and Analytics. He has been associated as visiting faculty with several esteemed business schools in India and abroad. He has assisted several Research Scholars in their Doctoral thesis and mentored several start-ups. He is also on the editorial board of a couple of journals published by academic institutions. Since 2004, Prof. Bhate has been the Managing Partner and co-founder of nmore, a strategic advising firm offering research-based solutions.



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National Agricultural Higher Education Project (NAHEP)  
ICAR-National Dairy Research Institute  
(Deemed University), Karnal**

A workshop has been arranged on “**Data Analytics**” under IDP, NAHEP project from October 29 - November 10, 2020. This workshop included the presentations by Prof. Uday Bhate (Consultant, Research and Data Analytics), an Alumnus of NDRI.



NAHEP



## Webinar Invite

Jointly organized by Anton Paar India  
and  
ICAR-National Dairy Research Institute  
[Under the aegis of Institutional Development Plan (NAHEP) Project]



Join our upcoming webinar and learn useful tips and tricks for choosing correct measurement for various food and dairy samples.

**Key Takeaways:**

- Introduction to viscoelastic behavior
- Evaluating flow behavior using simple viscosity rotational test
- Understanding shear rate, shear stress and dynamic shear viscosity of newtonian and non-newtonian materials
- Developing correlation between friction and sensory data for dairy/food products and beverages

**Speaker:**

- Dr. Kartik Pondicherry, Technical Manager-Rheology, Anton Paar India Pvt. Ltd.

[Click here to join the webinar!](#)

[www.anton-paar.com](http://www.anton-paar.com)

ICAR-NDRI with Anton Paar India has conducted a webinar on “**Advanced Characterization of Food and dairy based products through Rheology and Tribology**” under IDP, NAHEP project on November 27, 2020. Dr. Kartik Pondicherry (Technical Manager-Rheology, Anton Paar India Pvt. Ltd.) has delivered the lectures.



# VIRTUAL WORKSHOP ON FOOD SAFETY

4<sup>th</sup>-5<sup>th</sup>, January 2021 at 6.30-8.30 PM

&

7<sup>th</sup> January 2021 at 8.30-10.30 AM

Organizing Secretary: RAGHU H V., SCIENTIST, ICAR-NDRI, KARNAL

Registration: Free

Register through this link: <https://forms.gle/KiSFAQsz7qhR632T9>

## SPEAKERS

### 1. Prof. Arun K. Bhunia, PURDUE UNIVERSITY

Prof. Bhunia received his B.V.Sc degree from WS University of Animal & Fishery Sciences (India), Ph.D. from the University of Wyoming (USA), and postdoctoral training from the University of Arkansas (USA). He is a professor of food microbiology in the Department of Food Science and is also affiliated with the Department of Comparative Pathobiology, Purdue Institute of Inflammation, Immunology and Infectious Disease (PI4D), and Purdue University Life Science program (PULSe). He is chair of the interdepartmental Food Science Graduate Program. His expertise is in the area of microbial pathogenesis (host-pathogen interaction), probiotic bioengineering, and foodborne pathogen detection. To date, he has co-authored 193 peer-reviewed research publications, 2 textbooks (Fundamental Food Microbiology; Foodborne Microbial Pathogens—Mechanisms and Pathogenesis), edited 4 books, and delivered over 150 talks. He teaches graduate-level courses on Foodborne Pathogens and Mechanism of Pathogenesis, Microbial Foodborne Pathogen Detection Techniques, and Intestinal Microbiology and Immunology. He served in the USDA National Advisory Committee on Microbiological Criteria for Foods (NACMCF; 2013-2017) and has received Purdue Agriculture Research Award (2003), Purdue Faculty Scholar (2005), Purdue Team Award (2006), IFT R&D Award (2009), Outstanding Graduate Educator Award at Purdue (2013), High-End Foreign Experts Recruitment Program (China) fellowship (2014-2016), Fulbright Specialist (2016-2021), and Maurice Weber Laboratorian Award from IAFF (2017). He is also serving as the Associate Editor for Frontiers in Microbiology, PLoS One, Foods, Frontiers in Sustainable Food Systems, and BMC Microbiology.



### 2. Prof. Bruce M. Applegate, PURDUE UNIVERSITY

Prof. Bruce M. Applegate received his Ph.D. Microbiology from University of Tennessee, Knoxville (USA). Currently, he is a professor of Professor of Food Science, Dept. of Food Science at Purdue University (USA). His expertise is in the area of Detection of viable foodborne pathogens using bacteriophage; automated extraction of nucleic acids from various matrices; enumeration of microorganisms using quantitative PCR. To date, he has coauthored more than 150 research publications. He teaches both graduate and undergraduate level courses on food biotechnology, food fermentation, and microbial ecology. He is awarded eight patents. He is serving as an editor or editorial board member for several journals. He is a member American Society of Microbiology, Institute of Food Technologists (Professional Member), Hoosier Section of Institute of Food Technologists, International Association of Food Protection. He has received Entrepreneurship Leadership Academy Fellowship (2013-2014), College of Agriculture Millionaires Club (2006-2013), Purdue University Seed for Success Award (2006-2013), ESGR Patriotic Employer Award\* (2009), NASA Inventions and Contributions Board Award (2009), Agriculture Team Award. In a collaborative educational proposal with Dr. Heidi Dieffus-Deux and Dr. Kumar Hagaghi they obtained a \$100,000.00 USDA challenge grant to address the burgeoning new field of Nanotechnology and its application in agriculture.



### 3. Dr. Andrew Gehring

Dr. Andrew Gehring received his PhD Chemistry (Biochemistry) from San Diego State University and University of California, San Diego began his career with the USDA as a T.W. Edminster Postdoctoral Research Associate with the ARS's Eastern Regional Research Center located just outside of Philadelphia. His research focused on developing biosensor-based methods for rapid detection of foodborne bacterial pathogens, including immunomagnetic electrochemical methods for Salmonella spp. and E. coli O157:H7.



## Workshop on Food Safety

4 January 2021 to 7 January 2021

An online workshop on food safety is being organized for the students of ICAR-NDRI under the aegis of IDP-NAHEP project. The topics covered during the workshop includes food borne pathogens, conventional and biosensor methods, Molecular methods, molecular based biosensor methods – bacteriophage based sensors, immunosensors.

### Time Schedule

Tentative dates	Session Topic	Name of the professor
4 Jan 2021 US Time: 8:00 am – 10:00 am India Time: 6:30 pm – 8:30 pm (India time)	Introduction to Foodborne pathogens Conventional and biosensor methods	Dr. A. K. Bhunia (Purdue University)
5 Jan 2021 US Time: 8:00 am – 10:00 am India Time: 6:30 pm – 8:30 pm (India time)	Molecular methods Molecular-based biosensor methods - bacteriophage-based sensors	Dr. Bruce M. Applegate (Purdue University)
<b>For Lectures on Jan 4 and Jan 5th</b> <a href="https://purdue.us.webex.com/purdue/j.php?MTID=med8f72ae019f223ad5cd04cb43a09689">https://purdue.us.webex.com/purdue/j.php?MTID=med8f72ae019f223ad5cd04cb43a09689</a> Meeting No. 120 405 1392 Password: eVyanxp7J29		
6 Jan 2021 US Time: 10 pm India time: 8:30 am (7 Jan 2021)	Immunosensors	Dr. Andrew Gehring (USDA-ARS; Philadelphia)
<b>For lecture on Jan 6th</b> <a href="https://purdue.us.webex.com/purdue/j.php?MTID=ms8727e701168640278575282c43f024">https://purdue.us.webex.com/purdue/j.php?MTID=ms8727e701168640278575282c43f024</a> Meeting No. 120 142 4314 Password: 29RSqNJZPH6		

Certificates will be issued for the Registered Participants.

Organized and Supported by

**Institutional Development Plan (IDP)  
National Agricultural Higher Education project (NAHEP)  
ICAR-National Dairy Research Institute  
(Deemed University), KARNAL-132001**

A virtual workshop conducted on “Food Safety” by ICAR-NDRI under IDP, NAHEP project from January 4-7, 2021. The workshop included the different lectures delivered by various speakers viz. Prof. Arun K. Bhunia, Purdue University, Prof. Bruce M. Applegate, Purdue University and Dr. Andrew Gehring.



NAHEP

# A Webinar on the theme 'Women Empowerment'

011



January 28, 2021 (10:30 AM onwards)

## Speakers

**Dr. S. Lakshmi Devi,**  
Honorary Director,  
Centre for Entrepreneurship  
and Career Oriented Program,  
University of Delhi



**Dr. Shiva Durga,**  
Assistant Professor,  
Faculty of Education,  
GLA University,  
Mathura



Topic: **Celebrating the Glory  
of Women**

Topic: **Indian Women Administrators  
since Ancient Times**



**Presidential address** by Dr. M.S. Chauhan, Director, ICAR-NDRI

**Patron:** Dr. R.R. B. Singh, Joint Director (Academics)

**Co-Patron:** Dr. Latha Sabikhi, Chairperson, Student Empowerment Unit;

**Convener:** Dr. Meena Malik; **Co-convener:** Dr. Neelam Upadhyay

Organized by Student Empowerment Unit  
&  
Institute Development Project



Join Zoom Webinar at: <https://us02web.zoom.us/j/87022599320>

A webinar organized on “**Women Empowerment**” by ICAR-NDRI under IDP, NAHEP project on January 28, 2021. This webinar includes two different topics delivered by two different speakers viz. Dr. S. Lakshmi Devi (Honorary Director, Centre for Entrepreneurship and Career Oriented Program, University of Delhi) and Dr. Shiva Durga (Assistant Professor, Faculty of Education, GLA University, Mathura).

International Webinar  
on  
**Advances in Applications of Membrane Processing  
in Dairy and Food Industry**

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**Prof. Ulrich Kulozik**

Professor, Food and Bioprocess Engineering  
Technical University of Munich, Germany

"Advances in understanding and mitigating effects of deposit formation on membranes in dairy technology"



**Dr. Ritika Puri**

Marie Curie Career-FIT Research Fellow,  
University College Cork, Ireland

"Development of dairy ingredients for various food applications by membrane filtration technology"



**Dr. Jörg Vogel**

VP of Technology Development,  
Aquaporin A/S, Denmark

"A new membrane material and innovative process for natural concentration in dairy and F&B"

**Patron**  
Dr. M. S. Chauhan  
Director, ICAR-NDRI

**Co – Patrons**  
Dr. R. R. B. Singh  
Joint-Director (Academics)

Dr. Latha Sabikhi  
Head, DT Division  
ICAR-NDRI

**Convenor**  
Dr. Yogesh Khetra  
Scientist, ICAR-NDRI

**17<sup>th</sup> February 2021 Time: 2:30 PM (IST)**



**Link**

<https://us02web.zoom.us/j/89537692396>

Contact Person: Dr. Yogesh Khetra; Telephone: 0184-2259598; e-mail: yogeshndri@gmail.com

A webinar on the topic- "**Advances in Application of Membrane Processing in Dairy and Food Industry**" on February 17, 2021 has been organized under IDP, NAHEP project. Key speakers of this webinar were Prof. Ulrich Kulozik (Professor, Food and Bioprocess Engineering Technical University of Munich, Germany), Dr. Ritika Puri (Marie Curie Career- FIT Research Fellow, University College Cork, Ireland) and Dr. Jorg Vogel (VP of Technology Development, Aquaporin A/S, Denmark) and the topics covered by them were- "Advances in understanding and mitigating effects of deposit formation on membranes in dairy technology", "Development of dairy ingredients for various food applications by membrane filtration technology" and "A new membrane material and innovative process for natural concentration in dairy and F&B", respectively.



NAHEP



## International Webinar on 'Metabolomics and Proteomics in Food Science'

March 01-03, 2021

### SPEAKERS

#### Dr Ranjith Ramanathan

Associate Professor, Department of Animal and Food Science,  
Oklahoma State University, Stillwater, OK, USA



**Title: Gas chromatography-based metabolomics to elucidate metabolite signatures in food**

**March 01, 2021 (10.00 – 11.30 am)**



#### Dr Emmanuel Hatzakis

Assistant Professor, Department of Food Science  
and Technology, The Ohio State University,  
Columbus, OH, USA

**Title: NMR-based Metabolomics in Food Science**

**March 02, 2021 (10.00 – 11.30 am)**

#### Prof (Dr) Michelle Colgrave

Principal Research Scientist (Proteomics)  
and Lead (Future Protein), CSIRO Agriculture and Food,  
Brisbane, QLD, Australia



**Title: Proteomics Applied to Food Science: From Farm to Fork**

**March 03, 2021 (10.30 am – 12.00 pm)**

Please click the link below to join the Webinar:  
<https://us02web.zoom.us/j/86463996181>

**Registration: Free**

Google Form Link:

<https://docs.google.com/forms/d/e/1FAIpQLSdNlat0AzHH4q1BeeUlgivNuD48RL3j-mf-srKSQLfS2EYug/viewform>

**Certificate will be issued for the participants attending all the sessions**

#### Patron

**Dr. M.S. Chauhan**  
Director  
ICAR-NDRI

#### Co-Patron

**Dr. R.R.B. Singh**  
Joint Director (Academics)  
PI-IDP (NAHEP)  
ICAR-NDRI

#### Convenor

**Dr. Heena Sharma**  
Scientist  
ICAR-NDRI

ICAR-NDRI has organized an International Webinar on- "**Metabolomics and Proteomics in Food Science**" under IDP, NAHEP project from March 1-3, 2021. The webinars included three different topics narrated by three different speakers viz.- **Gas Chromatography-based Metabolomics to elucidate metabolite signatures in food** delivered by Dr. Ranjith Ramanathan, Associate Professor, Department of Animal and Food Science, Oklahoma State University, USA; **NMR-based Metabolomics in Food Science** by Dr Emmanuel Hatzakis, Assistant Professor, Department of Food Science and Technology, The Ohio State University, Columbus, USA; **Proteomics Applied to Food Science: From farm to Fork** delivered by Prof (Dr) Michelle Colgrave, Principal Research Scientist (Proteomics), CSIRO Agriculture and Food, Brisbane, QLD, Australia.

**International Webinar**  
**Trends in Food Packaging**

**Join us on Friday, March 5th, 2021**  
**from 12:30 PM to 3:30 PM (India Time)**

Distinguished speakers of global reputation will deliver talks focusing on active packaging, smart packaging and edible coatings and their applications.

**Topics:**

- **Active Food Packaging: Fundamentals and Emerging Concepts**
- **Food Freshness Indicators: Concepts and Emerging Trends**
- **Edible Films and Coatings for Shelf-life Enhancement of Fruits and Vegetables**

**\* Speakers profile overleaf**

**Chief Patron**  
**Dr. M.S. Chauhan**  
 Director, ICAR-NDRI, Karnal

**Patrons**  
**Dr. R.R.B. Singh**  
 Joint Director (Academics)  
**Dr. Latha Sabikhi**  
 Head, Dairy Technology Division  
**Coordinator**  
**Dr. P.Narendra Raju**  
 Scientist (Sr. Sc)

<https://us02web.zoom.us/j/86838259177?pwd=eklTtkcxoG145zVxZkZkSSUJmQm1YQ1Q0?>  
 Webinar ID: 868 3825 9177  
 Passcode: 171715





**International Webinar**  
**Trends in Food Packaging**

**Friday, March 5th, 2021** India Time: 12:30 PM to 3:30 PM

**Dr. Eva Almenar**  
 Associate Professor  
 School of Packaging, Michigan State University, USA

Scopus<sup>®</sup> H-index: 21  
 Google H-index: 25  
 I10 Index: 40

Dr. Almenar received her Ph.D. in Food Science and Technology from Institute of Agrochemistry and Food Technology (IATA-CSIC) (Packaging Laboratory) and University of Valencia, Spain in 2005. Since then, she has been mainly working in the field of packaging, in prolonging the shelf life of food. She has worked with different packaging technologies (MAP, controlled atmosphere packaging, active packaging, and coatings) and packaging materials (bio-based and petroleum-based) as well as with different fruits and vegetables (whole and minimally processed) besides other perishable foods.

**Prof. Bambang Kuswandi**  
 Head, Chemo and Biosensors Group  
 Faculty of Pharmacy, University of Jember, Indonesia

Scopus<sup>®</sup> H-index: 22  
 Google H-index: 26  
 I10 Index: 47

Prof. Kuswandi received his PhD in Instrumentation and Analytical Science from University of Manchester Institute of Science and Technology, Manchester, UK in 1999. His current research interests are development of chemical sensor & biosensor for applications in environmental, food, pharmacy, clinical & health monitoring including smart packaging and sensors for natural product pharmacy. The use of polymers & other novel/smart materials as solid support, reagent & indicator in sensors development. He has published over 50 research papers in journals of high impact.

**Prof. Asgar Ali**  
 Director  
 Centre of Excellence of Postharvest Biotechnology  
 University of Nottingham (UK), Malaysia Campus, Malaysia

Scopus<sup>®</sup> H-index: 26  
 Google H-index: 32  
 I10 Index: 57

He is the founding director of the 'Centre of Excellence for Postharvest Biotechnology' at the University of Nottingham. He has set the grounds for pioneering and innovative research in the field of edible coatings and films for postharvest biology. Additionally, he is constantly involved in the progress of science within postharvest biology as an Associate Editor of the journal of Horticultural Science and Biotechnology. He has published more than 80 research papers in reputed international journals.

<https://us02web.zoom.us/j/86838259177?pwd=eklTtkcxoG145zVxZkZkSSUJmQm1YQ1Q0?>  
 ID: 868 3825 9177  
 Pw: 171715




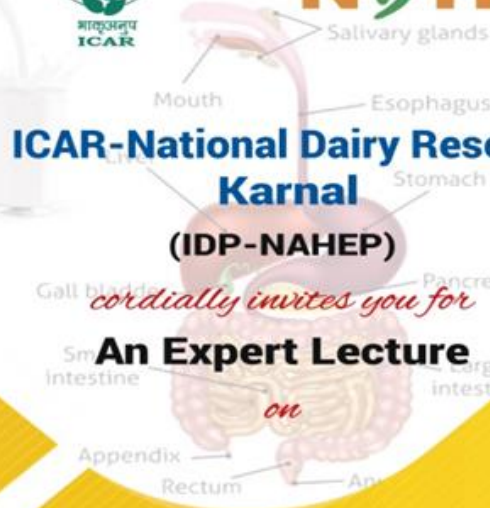




Designed by Dr. P.N. Raju

An International Webinar on "**Trends in Food Packaging**" has been conducted on March 5, 2021 under IDP, NAHEP project. The lectures were delivered by distinguished speakers viz. Dr. Eva Almenar (Associate Professor, School of Packaging, Michigan State University, USA), Prof. Bambang Kuswandi (Head, Chemo and Biosensors Group, Faculty of Pharmacy, University of Jember, Indonesia) and Prof. Asgar Ali (Director, Centre of Excellence of Postharvest Technology, University of Nottingham, UK, Malaysia Campus, Malaysia).




**ICAR-National Dairy Research Institute  
Karnal  
(IDP-NAHEP)**

*cordially invites you for*  
**An Expert Lecture**  
*on*


**Unraveling  
the Digestion  
Behavior of Milk**

**On March 17, 2021 (Wednesday)**  
**India Time: 2.30-4.00 P.M**

<https://us02web.zoom.us/j/81487471730>



**Prof Pete Wilde**  
Research leader (Food Structure,  
Colloids and Digestion)



**Quadram Institute  
Norwich, U.K**

**Chief Patron**  
Dr. M.S. Chauhan  
Director, ICAR-NDRI, Karnal

**Patron**  
Dr. R.R.B. Singh  
Joint Director (Academics)

**Coordinator**  
Dr. Rajesh Kumar Bajaj  
Principal Scientist

ICAR-NDRI has organized an International Webinar on- "**Unraveling the Digestion Behavior of Milk**" under IDP, NAHEP project on March 17, 2021. The webinar included an expert lecture by Prof. Pete Wilde (Research leader, Food Structure, Colloids and Digestion), Quadram Institute, Norwich, U.K.



NOHEP



International Webinar on

## Recent advances in the processing of high-value dairy products

### Key Speakers



**HARI MELETHARAYIL, Ph.D**

Vice President-Product Research  
National Dairy Council/Dairy Management Inc. USA

#### High Protein Yogurts- Ingredients and Process Insights

This talk will focus on the chemistry and process parameters that affect high protein yogurts' taste and texture and will also discuss processing strategies to achieve a low/reduced sugar with a higher protein yogurt.



**ROHIT KAPOOR, Ph.D**

Vice President-Product Research  
National Dairy Council/Dairy Management Inc. USA

#### The Science of Process Cheese

This talk will focus on the science behind process cheese and processed cheese type products and the effect of ingredients and processing on the functionality of process cheeses.

Saturday, March 20, 2021  
7.00 AM (IST)

#### PATRON

**M.S. Chauhan**  
Director  
ICAR-NDRI, Karnal

#### CO-PATRONS

**R.R.B. Singh**  
Joint-Director (Academics)  
ICAR-NDRI

#### Raman Seth

Head, DC Division  
ICAR-NDRI

#### CONVENOR

**Richa Singh**  
Scientist, ICAR-NDRI

Please click on below link to join the webinar

<https://us02web.zoom.us/j/87548154801>

An international webinar entitled- "**Recent advances in the processing of high-value dairy products**" have been conducted on March 20, 2021. This included two different lectures by two different speakers viz. "**High Protein Yogurts ingredients and process insights**" delivered by Dr. Hari Meletharayil, (Vice President-Product Research, National Dairy Council/Dairy Management Inc., USA) and "**The Science of Process Cheese**" given by Dr. Rohit Kapoor, (Vice President-Product Research, National Dairy Council/Dairy Management Inc., USA).



**International Webinar  
on  
Structures and digestion of milk  
and milk products**

**March 31<sup>st</sup>, 2021**

**09:00 to 11:00 AM (IST)**

**Topics:**

*Modification of properties of milk and milk products during gastro-intestinal digestion*

*Composition, structure and digestive dynamics of milk from different species*



**Distinguished Professor  
Harjinder Singh**



**Dr. Debashree Roy**



**Link to join the Webinar:**

**<https://us02web.zoom.us/j/85633011965>**

**Certificate will be issued to the participants**

**Chief Patron**

Dr. M.S. Chauhan  
Director, ICAR-NDRI

**Patrons**

Dr. R.R.B. Singh  
Joint Director (Academics)  
Dr. Raman Seth  
Head, Dairy Chemistry Division  
ICAR-NDRI

**Coordinator**

Dr. Kamal Gandhi  
Scientist  
Dairy Chemistry Division  
ICAR-NDRI

An international webinar on "**Structures and digestion of milk and milk products**" has been organized by ICAR-NDRI under IDP-NAHEP Project on March 31, 2021. Prof. Harjinder Singh, PhD, FRSNZ (Distinguished Professor and Director of the Riddet Institute, Massey University, New Zealand) and Dr. Debashree Roy, Riddet Institute, New Zealand have delivered the lectures.

**Equipment purchased/Instrumentation facilities Created:**



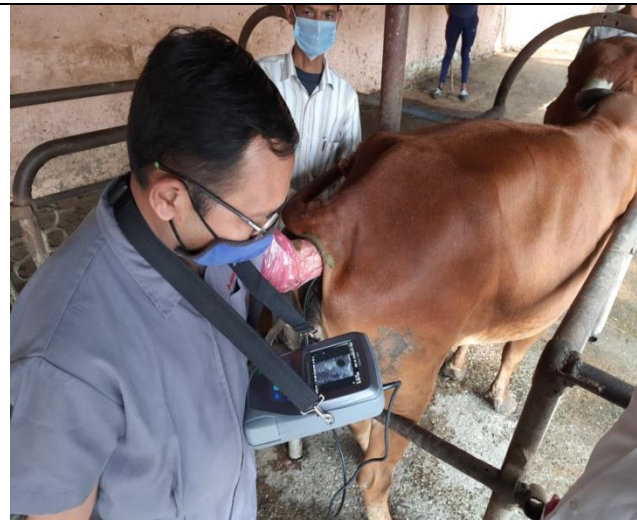
**CNC Machine**



**Bio-hazard waste Incinerator**



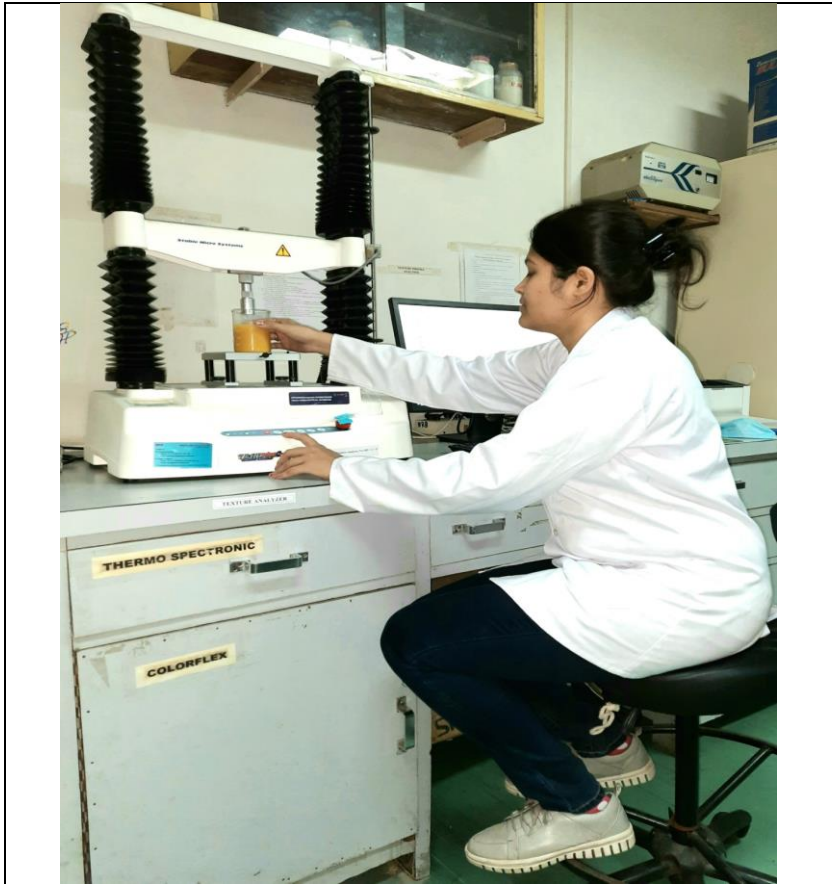
**Water Sprinkler Irrigation System**



**Veterinary Ultrasonography Unit**



**Color Doppler Ultrasound machine**



**Texture Analyzer**



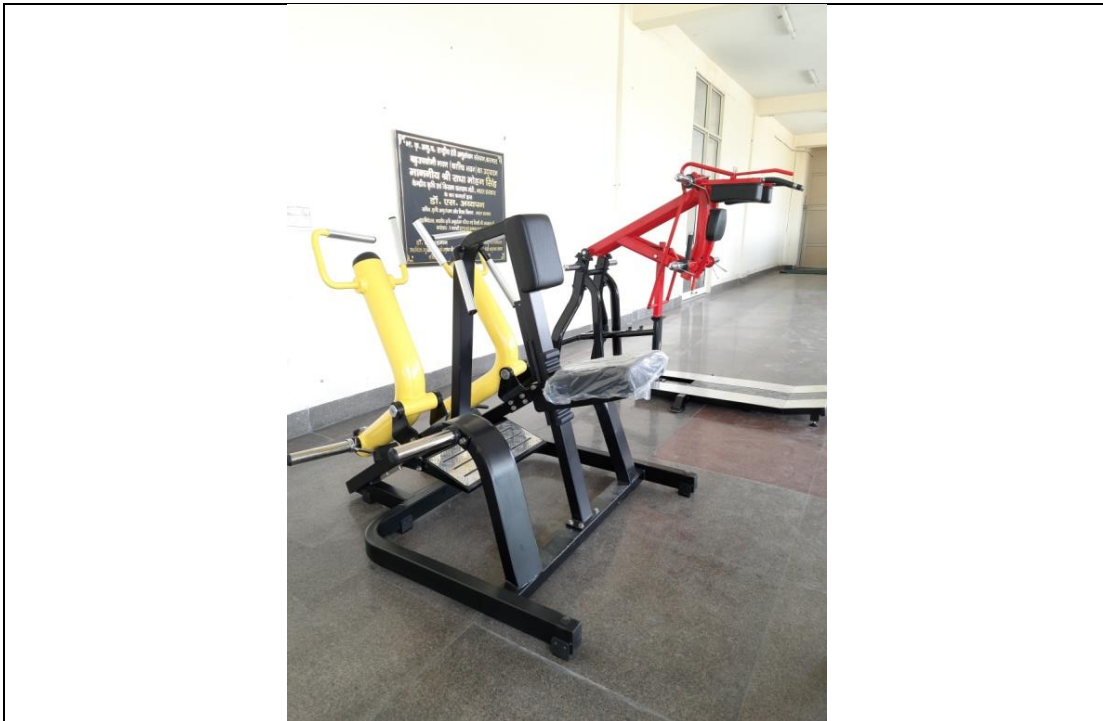
**Water Activity Meter**



**Fermentation Line**



**Batch Ice cream Freezer**



**Gym Equipments**





**Universal Testing Machine**

### **3.0 Disclaimer**

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