

REPORT ON EDUCATIONAL TOUR

Course Code - AHPD-5321

**B.Sc.- AG. (HONS.)-III YEAR, II SEMESTER
SESSION-2023-24**



INDIRA GANDHI KRISHI VISHWAVIYALAYA, RAIPUR

**SANT VINOBA BHAVE COLLEGE OF
AGRICULTURE & RESEARCH STATION
MARRA (PATAN), DURG, CHHATTISGARH**



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Submitted to – Dr. Sushila
[Assitant Professor Dept. of Agri. Economics]

Er. K.K.S. Mahilang
[Assitant Professor Dept. of FMPE]

**Submitted by - Students of III year SVB CARS
Marra, Patan**



**SANT VINOBA BHAVE COLLEGE OF
AGRICULTURE & RESEARCH STATION,
MARRA (PATAN), DURG, CHHATTISGARH**

CERTIFICATE

This is to certify that the course work in the Educational Tour, submitted by the students of III year of Sant Vinoba Bhave College of Agriculture and Research Station, Marra (Patan), Durg (Indira Gandhi Krishi Vishwavidyalaya, Raipur) in fulfilment of the degree of B.Sc. Ag (Hons) during academic session 2023-2024 has been approved by the internal course teachers after oral examination.

Dr. Sushila
[Assistant Professor Department of Agri. Economics]

Er. K.K.S Mahilang
[Assistant Professor Department of FMPE]

Dr. OP Parganiha
Dean of CARS Marra

INTRODUCTION

An educational tour for the students of III year (B.Sc. Agriculture (Hons)), of Sant Vinoba Bhave College of Agriculture and Research Station, Marra (Patan), Durg was organized as part of the curriculum to provide practical exposure, expand their knowledge, and foster personal and professional growth. The educational tour spanned from 11/05/24 to 22/05/24 and included visits to various destinations of academic and cultural significance including visits to various agricultural research institutes, universities, cultural sites, and natural landscapes.

The students had the opportunity to visit renowned agricultural research institutes such as IARI (Delhi), NBPGR (Delhi), NABI in Punjab. These visits exposed the students to cutting-edge research, modern farming techniques, and sustainable practices in the field of agriculture. They were able to interact with experts and gain valuable insights into the practical application of their studies. Additionally, the tour included visits to cultural and historical sites such Red Fort, Lotus into the rich cultural heritage and historical significance of India.

The report highlights the experiences, learnings, and impact of the educational tour on the students. It emphasizes the practical knowledge gained, interactions with experts, cultural appreciation, and personal growth opportunities throughout the tour. Overall, the educational tour proved to be a transformative experience for the students. It provided them with hands-on learning, exposure to diverse agricultural practices, and a deeper understanding of the cultural and historical fabric of the nation. The tour contributed to their academic and personal growth, instilling a sense of pride in their chosen field and equipping them with valuable insights and skills for their future careers.

- Duration of Tour – **11/05/24 to 22/05/24**
- Course Teachers – **Dr. Sushila & Er. K.K.S Mahilang**
- Team Managers for the Tour – Dr. Sushila & Er. K.K.S Mahilang
- States Covered – Delhi, Punjab, Himachal Pradesh & Uttarakhand
- Participants – Students of IIIrd Year (B.Sc. Ag. (Hons)), Sant Vinoba Bhave College of Agriculture & Research Station, Marra, Patan, Durg (C.G.)

ACKNOWLEDGEMENT

We would like to express our heartfelt gratitude to everyone who made the educational tour for us, the students of III Year, (BSc Ag. (Hons))- SVB, CARS, Marra, Patan), possible and successful. We are immensely grateful to our honorable Vice chancellor Dr. Girish Chandel and the college administration for organizing and supporting this educational tour. We would like to extend our heartfelt appreciation and acknowledgement to the Dean of our College, Dr. O.P. Parganiha, for his unwavering support and guidance throughout the planning and execution of this educational tour. His vision and commitment to providing practical exposure and enriching experiences for students in the field of agriculture are highly commendable.

We express our sincere appreciation and gratitude to Dr. Sushila (Asst. Professor, Dept. of Agricultural Economics, SVB CARS, Marra) for her invaluable contributions to our educational tour by playing a pivotal role in meticulously planning and organizing the tour. From selecting the destinations to coordinating transportation, accommodations, and scheduling, her attention to detail ensured a seamless and well-structured itinerary.

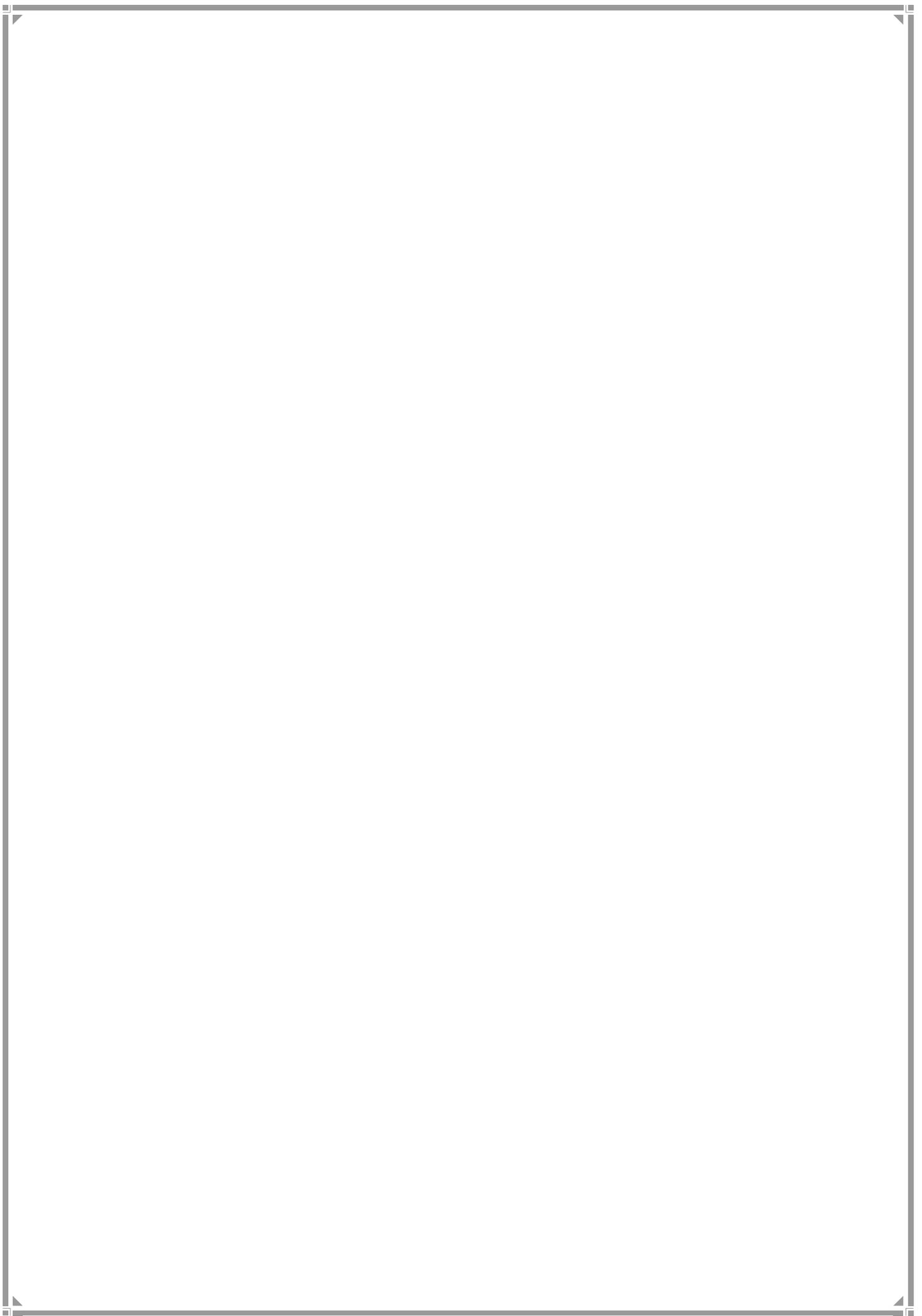
We would like to thank our dedicated team leader, Er. K.K.S. Mahilang, who accompanied us throughout the tour. His guidance, support, and expertise were instrumental in ensuring a smooth and insightful experience. His willingness to share knowledge and engage with us made the tour truly meaningful. We appreciate his efforts in ensuring our safety, comfort, and convenience throughout the tour.

We would like to express our gratitude to all the staff and faculty members of SVB CARS, Marra for their constant support, guidance and advices. We would like to acknowledge Dr. Prashant Kumar (Dept. of Agri. Extension), who worked tirelessly behind the scenes to ensure smooth logistics and transport arrangements.

Our heartfelt thanks to the esteemed scientists, researchers, the faculty and staff at Indian Agricultural Research Institute (IARI Delhi), National Bureau of Plant Genetic Resource (NBPGR), National Agri-Food Biotechnology Institute (NABI), Directorate of Mushroom Research (DMR) and Indian Institute Of Remote Sensing (IIRS) for opening their doors to us and imparting invaluable knowledge in the fields of agriculture including Agricultural Engineering, Agronomy, Horticulture, Forestry, Plant Breeding, Agricultural Entomology, Plant Pathology, Agricultural Extension, Agricultural Biotechnology, Soil Science, Animal Husbandry. Their warm welcome and hospitality made the visits to the institutions a memorable experience. Their informative sessions, and demonstrations provided us with invaluable insights into modern agricultural practices and cutting-edge research in the field. The interactions with the faculty members and researchers were truly enlightening.

We are immensely grateful for the opportunities, knowledge, and experiences gained during this educational tour. It has broadened our perspectives, enhanced our understanding, and nurtured our passion for agriculture. Once again, we extend our heartfelt thanks to everyone involved in making this education tour a resounding success.

Sincerely,
Students of III Year,
SVB CARS, Marra (Patan)



INDEX- Locations Visited

| S. No. | STATE | Date of Visited | Name of Institute/Research Station/Historical/Cultural Landmark | |
|--------|-------------------|-----------------|---|--|
| 1. | Mohali, Punjab | 13/05/2024 | NABI (National Agri-food Biotechnology Institute) CIAB (Central Innovative and Applied Bioprocessing) Rock Garden Sukhna Lake | |
| 2. | Solan, H.P. | 14/05/2024 | DMR (Directorate of Mushroom Research) Dr. Yashwant Singh Parmar University (Nauni) | |
| 3. | Shimla | 15/05/2024 | CPRI (Central Potato Research Institute) HFRI (Himalayan Forest Research Institute) Kufri (Site Visit) | |
| 4. | Dehradun | 17/05/2024 | IISWC (Indian Institute of Soil and Water Conservation) IIRS (Indian Institute of Remote Sensing) FRI (Forest Research Institute) | |
| | | 18/05/2024 | Mussorie | |
| 5. | Delhi | 19/05/2024 | Site Visit- Qutub Minar Lotus Temple Red Fort | |
| | | 20/05/2024 | NBPGR (National Bureo of Plant Genetic Resource) IARI (Indian Agricultural Research Institute) | |

DAY – 1
13/05/2024 (Monday)
NABI – NATIONAL AGRI-FOOD BIOTECHNOLOGY INSTITUTE
(KNOWLEDGE CITY, SECTOR-81, MOHALI, PUNJAB)



OBJECTIVE OF VISIT: An academic visit was carried out to National Agri-Food Biotechnology Institute (NABI), Sector 81, Mohali. The purpose of the visit was to expose students to various research activities undertaken in the premier research institution in government sector, and to give students a chance to interact with scientists and scholars working on cutting-edge biotechnology research. It was also an opportunity for the students to see the latest infrastructure used in the biotechnology sector.

BRIEF DETAIL ABOUT NABI

WELCOME: At NABI we were welcomed by Dr. Majumdar Department of biotechnology. He gave us brief introduction about National Agri-Food Biotechnology Institute (NABI), the main research focus, its achievements and history.

INTRODUCTION: National Agri-Food Biotechnology Institute (NABI) is the first Agri-Food Biotechnology Institute, established in India on 18th February 2010. The institute aims at catalysing the transformation of Agri-food sector in India. The institute has the vision to be a nodal organization for knowledge generation and translational science leading to value-added products based on Agri-Food biotech innovations. The main research focus of NABI is to harness biotechnological tools in the area of Agriculture Biotechnology, Food and Nutritional Biotechnology so as to provide sustainable and novel solutions towards quality food and nutrition. Activities undertaken at NABI under different areas includes,

1. Agricultural Biotechnology.
2. Food and Nutritional Biotechnology.
3. Human Resource Development.
4. Meeting and Courses.
5. Technology Transfer and Outreach.



Interaction With Nabi scientist

OBJECTIVES OF NABI: when we asked about objectives of NABI he gave us detailed information that-

National Agri-Food Biotechnology Institute is the very first food biotechnology institute established by Department of Biotechnology, Government of India. The institute's mandate is to carry out research in agri-food sector and improving nutritional quality through biotechnology

research. It is established with an aim to become a centre of excellence to provide leadership in agri-food research.

1. Research Excellence: Conduct cutting-edge research in agricultural and food biotechnology to address national and global challenges.

2. Technology Development: Develop innovative technologies and solutions to enhance agricultural productivity, food quality, and nutritional value.

3. Capacity Building: Train and educate scientists, researchers, and students in biotechnological techniques and applications relevant to agriculture and food sciences.

4. Collaboration: Foster collaborations with national and international institutions, industries, and stakeholders to facilitate knowledge exchange and technology transfer.

5. Commercialization: Facilitate to commercialization of biotechnological innovations for the benefit of farmers, food processors, and consumers.

6. Policy Support: Provide scientific expertise and evidence-based recommendations to support policy formulation in agriculture, food security, and biotechnology.

ACHIEVEMENTS OF NABI: NABI has achieved several notable milestones and accomplishments since its establishment.

1. Technological and Scientific Achievements
2. Crop Improvement and Genetic Engineering
3. Biofortification
4. Food and safety
5. Bioprocessing Technologies

Overall NABI's achievements underscore its significant contributions to advancing agricultural biotechnology in India, addressing challenges related to food security, nutrition, and sustainability through innovative research and technology development initiatives.

BIOTECHNOLOGY LAB: After introduction he took us to the biotechnology lab where he showed different modern biotechnology tools their uses in agricultural biotechnology sector. Further he told us. about the specialized equipment such as high -throughput sequencer mass spectrometer, fluorescence microscopes and advance chromatography system essential for conducting advance research in agricultural biotechnology.



Interaction with NABI Scientists

DIVISION OF PLANT BREEDING



Visit To Plant Breeding Chamber: Here Dr. Himanshu Nishad joined us and continued the session. He made us visit of plant breeding chamber which is the largest plant breeding chamber in India that is spread across 1200 square meters.

There were many different types of chambers with different types of artificial environment according to the plants. Such as wheat, paddy, tobacco, finger millet and so on.



Speed breeding chamber of wheat



Speed breeding chamber of Tobacco & Paddy

Objective of speed plant breeding chamber: Dr. Himanshu explained that speed plant breeding chamber is a specialized platforms for enhanced and efficient delivery of seeds by speeding up the plant life cycle and developing new varieties.

- ❖ The chamber has LEDs with different wavelengths of light, besides humidity and temperature controls, which can speed up the development cycle of a new variety of a plant, which could take a decade, to almost three years.



Main focus: Presently, the institute is working in the area of improving cereals for nutrition and processing quality, genome editing, genomics and computational biology approaches for marker and gene discovery.

- ❖ Being highly populated country, foremost objectives was to provide sufficient food to feed the millions of hungry mouths, hence major emphasis was on quantity rather than nutritional quality of the agricultural produce.
- ❖ This division has developed a variety of banana which is named as golden banana enriched with vitamin A to fight against malnutrition.



OUR EXPERIENCE- The educational tour to NABI, which is an autonomous institute of department of biotechnology which provided us exposure to explore the magic of biotechnology.

- ❖ At NABI we visited different division, where we got an opportunity to interact with scientists and scholar, here they have all modern instruments and techniques.
- ❖ The research ongoing here is very vast and mainly on genetically modified plants and crops which are kept under artificial environment.
- ❖ The scientist had developed many new varieties of cereals, pulses and fruits which are under field trial in different agronomical condition.
- ❖ We experienced great knowledge here and learnt a lot more than basic about biotechnology in agricultural biotechnology sector.



A visit to NABI

CIAB – CENTER OF INNOVATIVE AND APPLIED BIOPROCESSING (MOHALI, PUNJAB)



OBJECTIVE OF VISIT: The main objective of visit is to know about how agri- waste is being processed and convert into useful product. Grasp some knowledge about technology and modern instrument and their working which is going to help us in our further studies to utilize biological systems, living organisms, or their derivatives to develop or modify products and processes for specific purposes.

BREIF DEATIL ABOUT CIAB

WELCOME: Miss Priyanka Kaur (junior research fallow) attended and gave us detail view about CIAB.

- ❖ Development of novel bioprocessing technologies for industrial applications.
- ❖ Contribution to skill development through training programs and workshops.
- ❖ Successful collaborations with national and international institutions and industries.
- ❖ Advancement in biotechnological research impacting healthcare, agriculture, and environmental sustainability.
- ❖ They show us sample of their product, nano paper, nanocomposites, thermoplastic starch composites, broom grass CNC & apple CNC, etc.

INTRODUCTION: Center of Innovative and Applied Bioprocessing (CIAB), an autonomous institute of the Department of Biotechnology, Govt. of India, is the only institute in the country which works mainly on Secondary Agriculture and development of values added products from different types of bio resources. Its mandate fits well with the of Govt. of India`s programme on “Doubling the Farmer`s Income” with the same input.

Indian Agriculture is going on complete transformation are being burnt by many farmers. If this Agri-waste is used to isolate bioactive compounds with high market value, it can directly benefit the farming community by increasing their farm income. It will not only provide new avenues to establish industrial units on utilization of Agri-waste but will also provide new employment opportunities to the rural areas. The Central Institute of Innovative and Applied Bioprocessing (CIAB) in Mohali, Punjab, was established in 2008 by the Department of Biotechnology, Government of India. It was founded to focus on bioprocessing research and development, aiming to bridge the gap between research outcomes and industrial applications in biotechnology. Since its inception, CIAB has grown to become a leading institute in advancing biotechnological innovations and fostering collaborations with national and international partners.



At CIAB lab



Product Made from Agri waste

OUR EXPERIENCE: The educational tour to CIAB which provided us exposure to explore the magic of biotechnology At CIAB we saw different machines which are used to convert agri-waste into useful product.

- ❖ The main focus of this institution is Doubling the farmer's income.
- ❖ we saw some products made out of agri-wastes. we got a lot to learn and experience about new technologies and modern instruments.
- ❖ We saw different instrument which were incredibly capable in converting agri waste into useful product.
- ❖ Name of the instrument are Membrane Filtration system, Spray dryer, Ice flaking machine, Twin-screw extruder.
- ❖ At the end we came to know the true meaning of recycle & reuse.



ICE FLAKING MACHINE



A VISIT TO CIAB

ROCK GARDEN

“TRAVEL IS STILL THE MOST INTENSE MODE OF LEARNING”



INTRODUCTION: The Rock Garden of Chandigarh is a renowned sculpture garden in Chandigarh, India, created by Nek Chand. It features numerous sculptures made from industrial and home waste and discarded items. Spread over 40 acres, the garden showcases a labyrinth of paths, courtyards, and waterfalls, all adorned with sculptures crafted from recycled ceramics, glass, and other materials. It is a unique blend of art and recycling, attracting visitors from around the world since its inception in the 1950s.



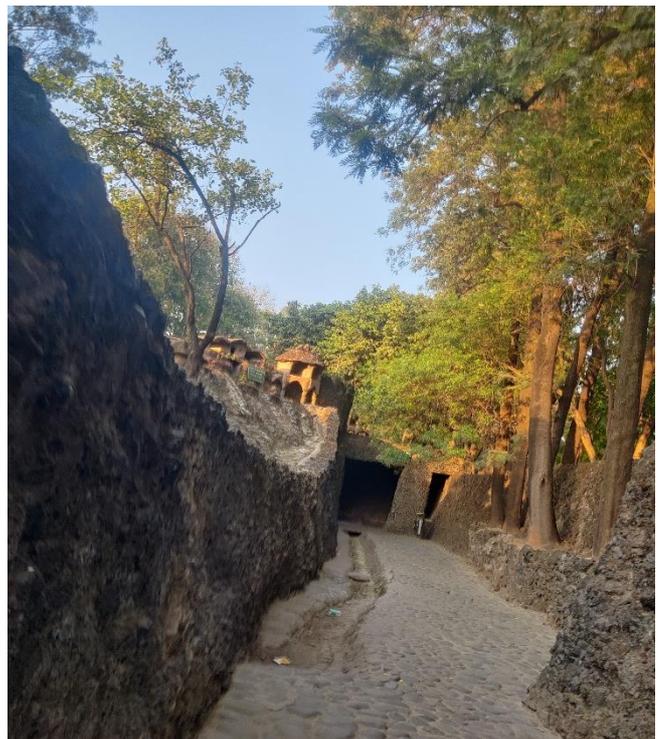
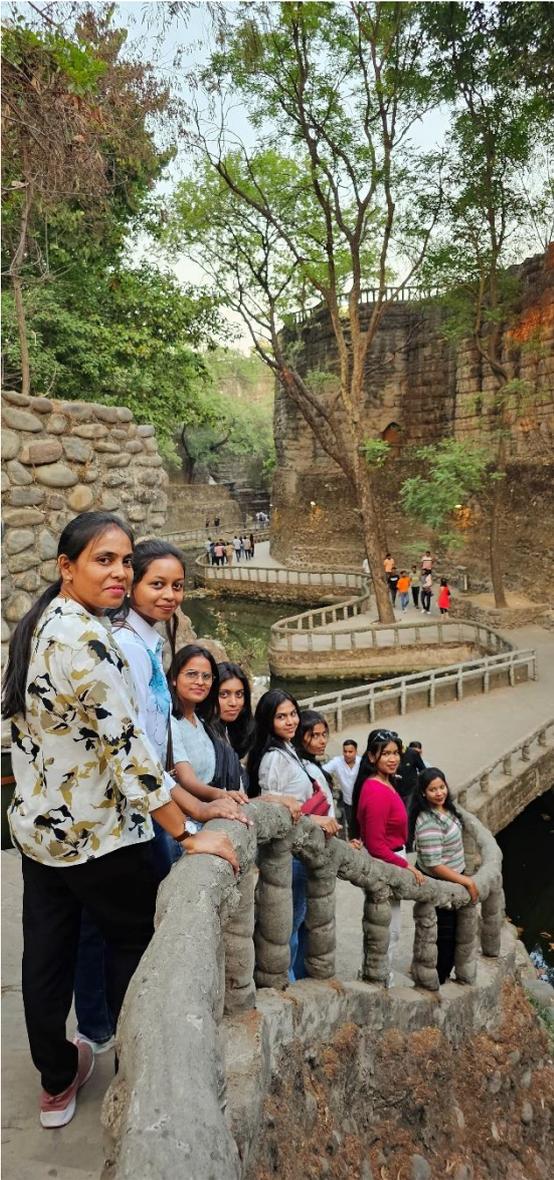
VISIT OF ROCK GARDEN



Our Experience:

- ❖ We experienced a garden or more often a part of garden with landscaping framework of rock, stones & gravel.
- ❖ Rock garden of Chandigarh it was a delightful experience to see some creative stuffs made out of junk or recycled material.
- ❖ There are many things made of things like bangles, electric materials, broken crockery etc.
- ❖ But some of them looked plain creation of cement and stone.
- ❖ There are some water bodies inside the rock garden which make this place more interesting.
- ❖ Apart from man-made waterfalls there are some canals around the place & kids love to play around these.
- ❖ We will find a lot of statues carved out of rocks, mini waterfall, doll museum, aquarium, swings, etc.
- ❖ People of different age and from various walks of life come to this place with different expectations.
- ❖ It was completely different and we were happy to see everyone enjoying in their own way without any problem.
- ❖ Toward the end of rock garden, there is a huge ground. This place is one of the popular picnic stations for children. Lots of space to play, enjoy camel ride, and much more around the space.

Glimpse of Rock Garden



SUKHNA LAKE



INTRODUCTION: Sukhna Lake is a manmade lake which is situated in the foot of Shivalik hill in Chandigarh in India. In 1958 this was made by le Corbusier and the chief engineer PL Verma by making a dam. It spread in 3 square kilo meter area and is a popular spot for leisure activities like boating and jogging. The lake, surrounded by a promenade and gardens, attracts both locals and tourists seeking relaxation and scenic views amidst Chandigarh's urban landscape. The average depth of lake is 8 feet. The first paddle boat was designed by Pierre Jeanneret.



EVENING VIEW OF SUKHNA LAKE

OUR EXPERIENCE

Sukhna Lake in Chandigarh offers students a unique blend of creativity and natural beauty.

- ❖ We reached at Sukhna lake in evening and that evening view was breathtaking.
- ❖ At Sukhna Lake, they engage in activities like birdwatching and boating, gaining insights into ecology, urban planning, and recreational use of natural resources.
- ❖ Sukhna lake is favourite for local resident for morning and evening walk considering its serene environment and picturesque views.
- ❖ Lake can be enjoyed by taking boat ride and ticket ranges from 200 to 400.
- ❖ We performed various activities like swing, boat ride, clicking picture etc.
- ❖ Other than this visitor can have food and snack from various shops here.
- ❖ There is track of 4 km where people are seen jogging and walking.
- ❖ Sukhna lake has been a hub for cultural event & festival that draw tourist national & internationally.
- ❖ It was quiet and beautiful place in Chandigarh where we could relax and enjoy nature's beauty.

Day-02
14/05/2024(Tuesday)

**ICAR – DIRECTORATE OF MUSHROOM
RESEARCH(DMR)**
SOLAN, HIMACHAL PRADESH



OBJECTIVE OF VISIT: The main objective of taking us to the research centre are to provide us knowledge about mushrooms and their different varieties such as oyster & button. To promote students for starting mushroom cultivation which would later become profitable.

BRIEF DETAIL ABOUT DMR

WELCOME: Dr. Abhisak sharma welcomed us and enlightened about DMR. He showed us various varieties of mushroom and gave us some description about it.

INTRODUCTION: ICAR – Directorate of Mushroom research is located in Solan city of Himachal Pradesh, indeed added to the gateway of Himachal Pradesh. The mountains wonder of Solan city is famous for its culture, excellent picnic spots, numerous of temple seasonal vegetable crops. Being quite industrialised, Solan is widely popular for its mushroom cultivation and bearing the little of Mushroom city of India, considering the contribution of this city and endeavour of ICAR-DMR toward Mushroom research development cultivation on popular suggestions of mushroom. The honorable Chief Minister of Himachal Pradesh declared Solan as mushroom city of India on 10th September 1997 during the last year, Indian Mushroom conference organize jointly by the DMR and Mushroom society of India.

Objectives of DMR: Currently ICAR–DMR is working on collection identification conservation and genetic characterization of Mushroom germplasm, development at high yielding varieties, improvement in the production technologies of different edible mushroom, technology developed for newer specialty mushroom, integrated pest and disease management, postharvest technologies for various Mushroom and imparting training to the trainer, entrepreneur, growers, unemployed youth, woman growers, etc.

Sir had shown us different varieties of mushroom with their samples and taught us different methods for identification of varieties. He had also shown us the compost which they make themselves for growing mushrooms. Also, gave us a brief description about every sample of mushroom they grow on their centre.



Exhibition of different varieties of mushroom



Compost yard of DMR

Mushroom varieties developed by ICAR-DMR



Pink Oyster Mushroom - Cultivation technology of this mushroom was developed by DR. R.C Upadhyay. Pink oyster mushroom has a light to dark pink coloured cap and can readily colonize on any kind of agricultural waste, including wheat or paddy straw sugarcane bagasse. The texture of fruit body is hard compared to other species. This Mushroom is suitable for cultivation in the months of April in the northern and in plains region of central state of India. The biological efficiency of this species ranges from 50-90%.

Shiitake Mushroom -This technology developed by DR. V.P Sharma, DR. Satish Kumar and DR. Manjit Singh. The shiitake mushroom is the most important edible, medicinal mushroom with excellent nutritional value. Its nutritional components include bio-active polysaccharide such as B-D-glucan, heteroglucan. Traditional shiitake has been grown on natural logs of various species of trees. Commercially cultivation of shiitake is done on sawdust broad leaves trees enriched with organic nitrogen sources.



Milky Mushroom - Cultivation of milky mushrooms was developed by DR. RP Tiwari. Milky white mushrooms are highly suitable for commercial production in coastal area with hybrid tropical and subtropical climate. Milky white Mushroom extracts are known to have anti-hyperglycemic effect and anti-lipid per oxidation effect. Calocybe Indica can be grown on wide range of substrates.

Paddy Straw Mushroom – Cultivation technology of paddy straw mushroom was developed by DR. OP Ahlawat, Presently, its cultivation is done in southeast Asian countries likes Philippines, Malaysia. In India, this mushroom is cultivated in states like Odisha, Andhra Pradesh, Tamil Nadu, Karnataka, West Bengal. The excellent unique flavour and textural characteristics distinguish this mushroom from other edible mushrooms. The straw Mushroom is known to be rich in minerals such as potassium, sodium and phosphorus. Potassium constitutes the major fraction of major element followed by sodium and calcium. This Mushroom can be cultivated on paddy straw, Cotton ginning mill waste.



Our Experience: As an agriculture student visiting Solan, Himachal Pradesh on an educational tour, visiting the Directorate of Mushroom Research was an enlightening experience. The facility was nestled amidst lush green hills, a perfect backdrop for studying mushrooms.

- ❖ They introduced us to various aspects of mushroom cultivation, emphasizing its importance in agriculture and its potential as a sustainable food source. We were given a comprehensive tour of research laboratories and experimental mushroom farms.
- ❖ During the tour, we learned about different species of mushroom, their growth requirements, cultivation techniques, and the ongoing research aimed at improving yield and quality.
- ❖ Sir shared their insights into the challenges faced by mushroom growers and how research was addressing these issues through innovative methods.
- ❖ One of highlights was witnessing the different stages of mushroom cultivation first hand- from substrate preparation to harvesting. The hands-on experience enriched our understanding of the theoretical knowledge gained in classrooms.
- ❖ sir patiently answered our questions, provided valuable career advice and discussing opportunities in mushroom research and agriculture.



Visit of DMR, Solan

Dr. YASHWANT SINGH PARMAR UNIVERSITY OF HORTICULTURE & FORESTRY

NAUNI (Himachal Pradesh)



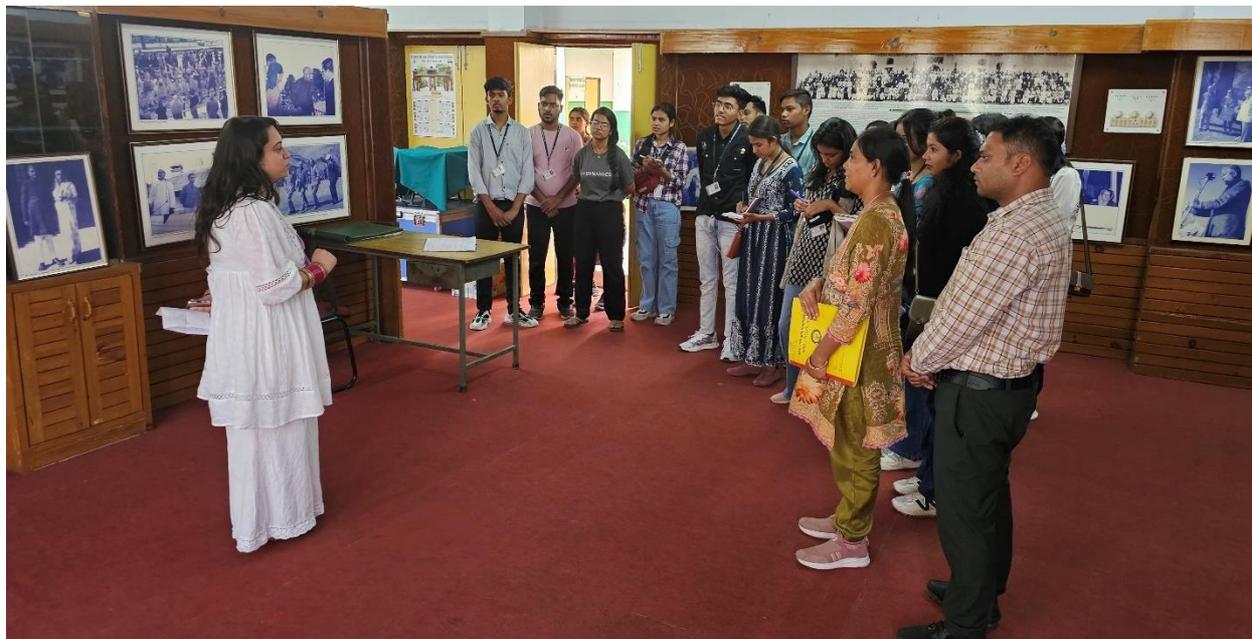
OBJECTIVE OF VISIT: The main purpose to visit this university is to learn about horticulture and forestry department. To know about the different crop and plant species and their preservation, conservation and regeneration. It was a great opportunity to learn about all these knowledges which is very helpful for our higher education.

BRIEF DETAIL ABOUT Dr Y.S PARMAR UNIVERSITY

WELCOME: After entering Dr. Yashwant Singh Parmar University, Assistant Professor of Extension Education Dr. Pratima Rana welcomed us and told about the first chief minister Dr. Yashwant Singh. His work and contribution for the state as well as for university was displayed at museum of YS Parmar University.

INTRODUCTION: DR. Yashwant Singh Parmar University of Horticulture and Forestry, known by the abbreviation DR.Y. S Parmar University of Horticulture and Forestry is a State University located in district, Solan, Himachal Pradesh, India. It has exclusive education, research and extension in horticulture and forestry. The Himachal agriculture college solan, was established in 1962, and affiliated to the Punjab university. DR. S.S Jain, Mycologist and plant pathologist was the officer on a special duty appointed by the H.P. state government Department of Agriculture to set it up. In 1970 the Himachal Pradesh university was established and the college became one of its campuses. In 1978 it became the horticulture complete of the recently established Himachal

Pradesh Krishi vishwavidyalaya. Finally, on 1st December 1985, it was upgraded to a State University and named after Yashwant Singh Parmar, the first Chief Minister after Himachal Pradesh. It was inaugurated on 30 April 1998 by the late Rajiv Gandhi Prime Minister of India. The university is located at an elevation of about 1300 meter, above mean sea level. The total farm area of the university is in the world display over 545 hectares. At the main campus and 202 hectares with the Regional Horticultural Research and training stations and the Krishi Vigyan kendra.



OBJECTIVE:

- ❖ Human resource development in horticulture, forestry and allied science.
- ❖ Advancement of basic and applied research to horticulture, forestry and allied sciences.
- ❖ Extension and dissemination of scientific information among the rural masses of the state.
- ❖ Development of linkage with state, centre, international institute.





Museum of Directorate of Extension Education

- ❖ All of us along with Dr. Pratima Rana went to the museum of admission and found products and byproducts related to horticulture. Product like papaya, apple, and other products were kept there. Products taken by the university were displayed in the museum. Bottle gourd, soyabean, French bean, better cucumber, popcorn etc. were displayed there.



Museum of DR. Y.S. Parmar sir

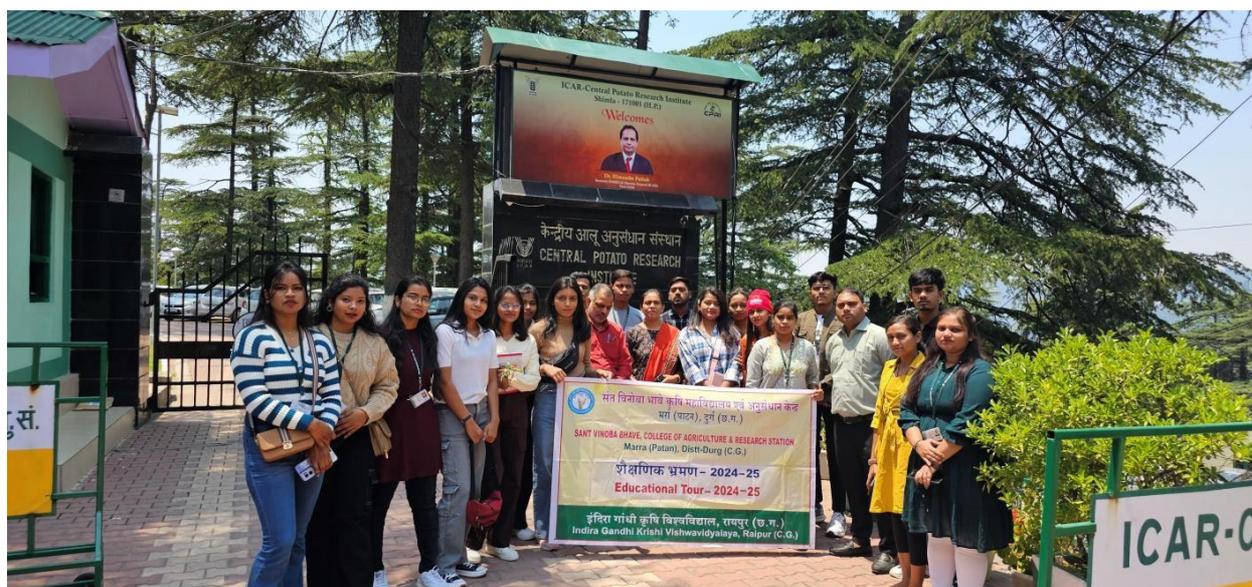


Exhibition Hall

OUR EXPERIENCE: DR Y.S Parmar University Nauri, Solan is a place full of knowledge and is surrounded with beauty of nature.

- ❖ We got an opportunity to know about DR Y.S Parmar during the visit of his museum as the university is named after him.
- ❖ The exhibition hall was full of different types sample collection. Such as varieties of fruits, vegetables, germplasm, books, fertilizers and byproduct made by different fruits.

CENTRAL POTATO REASEARCH INSTITUTE (CPRI) SHIMLA



OBJECTIVE OF VISIT: The purpose of visit was to provide students with varietal development and identify improved production technologies for potato in different agro-climatic region to help achieve high total factor productivity across the country. The tour aimed to enhance the students understanding of potato production and research and their role in agricultural industry.

BRIEF DETAIL ABOUT CPRI

WELCOME: we were welcomed by Dr. Rajendra rao who gave us short details about CPRI.

INTRODUCTION: Indian Council of Agricultural Research (ICAR)- Central Potato Research Institute (CPRI) was established during August 1949 at Patna (Bihar, India) on the recommendation of the Agricultural Advisor to the Government of India, Sir Herbert Steward under the Ministry of Agriculture and Farmers Welfare, Government of India. The institute was later on, shifted to Shimla, Himachal Pradesh in 1956 in order to facilitate hybridization work in potato breeding and maintain seed potato health. It was transferred to the ICAR in April 1966. ICAR-CPRI is situated in the heart of Shimla (31.0965 N and 77.1717° E) near Bemloi, Himachal Pradesh, India. Shimla is the headquarters of the institute. It is approximately 4 km from Bus Stand and 6 km from railway station on the national highway no. 21. It is located at altitude of 2200 meters above mean sea level and has wet temperate climate.



AUDITORIUM, CPRI

- ❖ After that we went to auditorium of CPRI where we were showed the documentary of history and research of CPRI.

POTATO RESEARCH AND PRODUCT DEVELOPMENT: CPRI plays a crucial role in developing and improving potato research and product. The institute conducts research to enhance quality, and develop new varieties and improve their shelf life and nutritional value. CPRI offers training for farmer and farmers. It provides specialized education and practical training to student and farmer.

CPRI actively engages in extension and outreach activities to disseminate research findings and best practices to potato research, industry professionals, and policymakers. It conducts raining programs, workshops, demonstrations, and provides advisory services to promote the adoption of suitable practices and enhance the efficiency and productivity of potato production and reasearch.

Varieties of Potato developed by CPRI: Dr. Rajendra rao showed as different varieties of potato. Further he explained that being a cold region potato is grown in large area because of the favourable environment. Here are the few varieties displayed in the auditorium:

- ❖ Kufri Sadabahar
- ❖ Kufri chipsona -3
- ❖ Kufri Pushkar
- ❖ Kufri Girdhari
- ❖ Kufri Khyati
- ❖ Kufri Sundari
- ❖ Kufri Jyoti
- ❖ Kufri Bahar



Potato varieties displayed in auditorium

OUR EXPERIENCE:

- ❖ Visiting CPRI was a knowledgeable experience for us, we got to know about the institute, research, farming as well as different cultivation techniques.
- ❖ We learned about technology assessment and refinement.
- ❖ Totally new experience about potatoes and their consumption.
- ❖ It is must visit place for students.

KUFRI (Site visit)



INTRODUCTION: Kufri is a hill station in the district of Shimla, India. On the Kufri Avenue, the main thoroughfare, boutiques and restaurant mixed with Indian style hotels and souvenir shops all to look for during a visit. It's more most well know attraction is the Himalayan nature park, a high altitudes zoo with a diverse array of plant and animal life. Tourists go to Mahasi peak to take in the breathtaking scenery of the snowy hill station. It is located 20 km from the state capital, Shimla on the National Highway no. 22. Kufri is located at 31.10° N and 77. 25° E and has an average elevation of 2,720 meters.

HISTORY: The region around the Shimla, including Kufri was once a part of the kingdom of Nepal until the area was added to the British Rajspart of the Sugauli treaty. The region remained obscure from the rest of the world until the British discovered it in 1819.

ACTIVITIES

- ❖ Trekking – The best way to explore the beauty of the hill stations and nearby the area is by embarking on short trek. Khuwalia peak hike is the perfect trekking destination to enjoy unobstructed view of the valley.
- ❖ Camping – We enjoyed camping amidst the lush green trees of the Kufri. Some popular campsites near this hill station include the hidden gem, cloud camping and hail Himalayas.
- ❖ Zip Lining - Flying ox, the cable to rail rollercoaster, zipline, in this hill station offers the perfect amount of adrenaline rush to adventure seekers.
- ❖ Yak / Horse ride – The ride in this hill station is an exciting alternative to the more traditional equestrian riding. While riding on yak/ horse through the scenic mountain and forest routes, you may take in breathtaking views of the surrounding mountains.



OUR EXPERIENCE

- ❖ Kufri is one of the best as well as most beautiful place that we visited during this tour.
- ❖ some activities were performed by us such as horse riding and little bit of trekking to get beautiful view from the top point.
- ❖ We tried their cultural dresses which was looking pretty.
- ❖ It helps us to provide unique opportunity to explore cultural heritage and gain beautiful insights.
- ❖ It is a place which attracts most of the national and international tourists.



HIMALAYAN FOREST RESEARCH INSTITUTE

SHIMLA, HIMACHAL PRADESH



OBJECTIVE OF VISIT: an academic visit to Himalayan Forest Research institute (HFRI) was carried out to expose the knowledge about this institute and the research going on here for the development of the region.

BRIEF DETAIL ABOUT HFRI

WELCOME: Dr. Kuldesh Sharma welcomed us at HFRI and immediately after that he gave brief detail about the institute and the work going on to save the forest and the ecology.

INTRODUCTION: Himalayan Forest Research Institute, Pantha Ghati, Shimla is a premier institute conducting forest related research work and activities in north western Himalayan regions of the country, Himachal Pradesh and union territories of Jammu & Kashmir and Ladakh. The institute is a regional institute of the Indian council of forestry research and education, Dehradun, an autonomous body functioning under the Ministry of Environment, Forest and climate change government of India. Himalayan Forest Research Institute, Shimla was established in 1977, as high levels conifers regeneration research centre with the objectives of carrying out research on the problem of natural regeneration of rye and rapeseed.

DIVISION

At present the institute has six divisions-

- Forest ecology and climate change
- Forest conservation
- Genetics and industry stream improvement

- Silviculture and forest management
- Extension division
- Facilities and services

ACHIEVEMENT

Study of the factors hindering the natural production of rye and tosh and developed technology based on successful artificial production and transferred to Himachal Pradesh forests department.

- HFRI developed nursery technology of rye and wheatgrains transferred to forest department.
- Study on seed germination of Rakhhal, juniper, kuja, Birdcherry and chharna developed and technology transferred to stakeholders.
- Study of major species of cold desert and their production capacity.
- In district, Sirmaur and district Mandi, agroforestry successful expansion through popular and local species. Study and preservation of insects that bore holes is a popular tree success.
- Successful treatment of the most damaging insect in Cedar, by insecticides and to disseminate the develop technology to the stakeholders.

HERBARIUM: The institute has the herbarium, which was established in the year 2000, and has about 4000 plant Specimens collected as per standard procedure, mainly for north western Himalayas and cold deserts. Sample of rare species of plants from these nurseries have also been provided to the forest research institute Dehradun and the botanical survey of the India, Dehradun. It also provides assistance in identification and certification of plants samples from other departments on payment basis.



OUR EXPERIENCE:

- ❖ HFRI taught us that how important the conifers are for the region and people living there.
- ❖ We saw different products made from conifer and how it became the source income for the tribal people.
- ❖ We got to know about cultural heritage of Shimla

- ❖ We got to experience the peace of hills in Shimla, the environment was pleasant and food was delicious.
- ❖ It was a wonderful opportunity for us to interact with IFS trainees and the local people were very gentle and kind to us.

DAY – 7
DATE – 17/05/2024
INDIAN INSTITUTE OF SOIL AND WATER CONSERVATION (IISWC)
DEHRADUN, UTTARAKHAND

We embarked on our journey from Shimla on 16 May, travelling by bus and arrived approximately at 5 pm. We stayed at the IISWC guest house. On very morning of 17 may, we had the opportunity to visit the institute.

OBJECTIVES OF THE VISIT

- ❖ To gain practical insights into soil and water conservation techniques.
- ❖ To understand advanced research methodologies in sustainable land management
- ❖ To interact with experts and researchers to enhance our subject knowledge.
- ❖ To be aware about the latest technologies and innovations in soil and water conservation.

Campus of IISWC



BRIEF OF IISWC VISIT

Our visit to the IISWC was hosted by Dr. Suresh Kumar (senior scientist) at IISWC. He told us that the institute was established in 1954 and it operates under the Indian Council of Agricultural Research(ICAR) and focuses on addressing issues related to soil erosion, land degradation and water management.

OBJECTIVE :

- ❖ The institute aims to develop sustainable technologies and practices to conserve soil and water resources, thereby enhancing agricultural productivity and environmental health.
- ❖ and various technologies adopted for soil and water conservation such as watershed management, rain water harvesting, precision agriculture, integrated farming system, agro forestry etc.

❖ He also mentioned about the mission and visions of the institution which are:

MISSION:

The mission of the Indian Institute of Soil and Water Conservation (IISWC) is to develop, demonstrate, and promote sustainable technologies and practices for soil and water conservation to enhance agricultural productivity, ensure environmental health, and improve the livelihoods of rural communities.

VISION:

The vision of IISWC is to be a leading institute in soil and water conservation research, education, and extension services, contributing to sustainable land management and the overall well-being of society.

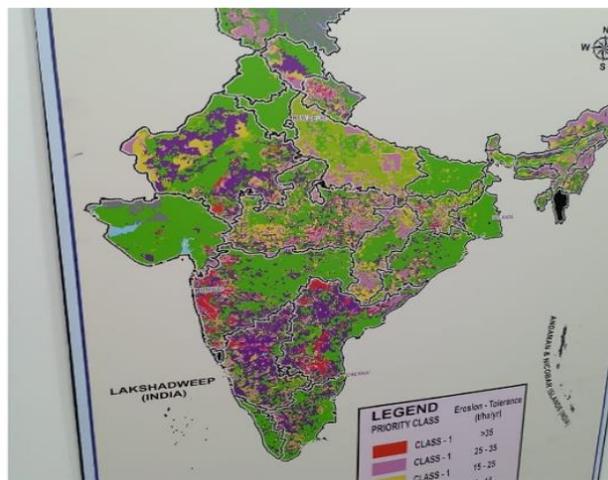
Later we saw the museum of IISWC, where he described about different methodologies of soil and water conservation were displayed.

VISIT OF IISWC MUSEUM:

The esteemed instructor introduced us to various aspects of our subject that we were previously unaware of. He showcased several posters displaying different measures for soil and water conservation, including mechanical measures, various maps indicating soil loss, and conventional systems used for conservation



Interaction With Senior Scientist at Museum, IISWC



lands in arid, semi arid and sub-humid regions for erosion control, water conservation and improvement of crop productivity.

- Crops such as maize, sorghum or bajra which require good drainage are cultivated on the sloping area while water intensive crops like paddy are raised on the levelled portion.
- CBT system harvest runoff from the upper area for the benefit of crops grown in the lower levelled portion of the field.
- Thus, even under low rainfall conditions, both the crops can sustain on the conserved moisture.
- For sustained and secured cropping sequence, the CBT system in conjunction with proper water harvesting and recycling techniques, is an efficient conservation practice for *in-situ* rain water management.

Advantages

- Reduces the length of slope to dissipate the energy of flowing water thereby minimizing erosion.
- Harvests runoff from upper area for the benefit of crops grown in the lower levelled portion which can sustain on conserved moisture during erratic distribution of rainfall.
- Provides resilience to crop production system with higher productivity and economic benefits.

Scope of application

- CBT system has great potential for adoption in mildly sloping lands upto 6% slope having silty loam to silty clay loam soils.
- It may be applied in conjunction with

part of this area receives low (<750 mm) and erratic rainfall. Conservation ditching technique has shown the way to conserve water resource at field level for increasing the productivity of semi-arid black soils.

- Conservation ditching is primarily adaptable in deep black soils with low infiltration rate (<1 mm/h) in the areas receiving low annual rainfall (<750 mm).
- It is a shallow trapezoidal dugout ditch laid on contour to serve the dual purpose of soil & water conservation.

Design specifications

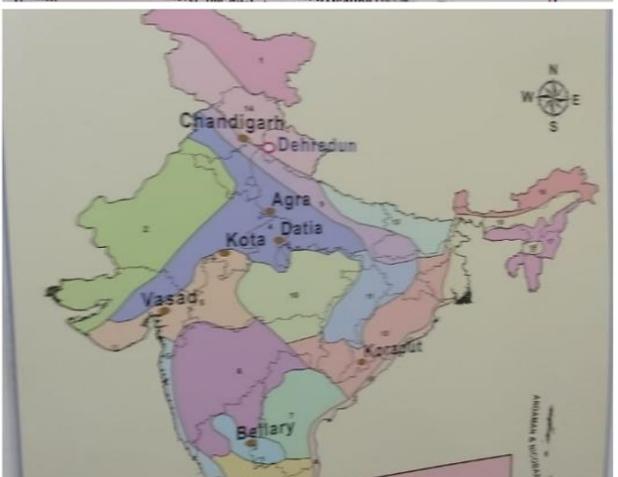
- Ditch is designed to store 200 to 300 m³ of runoff from a hectare of inter-terrace land in black soil region of Deccan Plateau.
- Spacing between ditches is same as that of contour of graded bund for similar soil, climatic and topographical conditions.
- Depth of the ditch is made in the range 0.6 to 0.9 m depending upon the storage volume and soil depth.
- About 30 to 300 m long ditch is constructed in segments of 100 m. In case of series of ditches, the unditched stretches (4 to 5 m) should be staggered for effective erosion control.

Technology

- Collect the cadastral map from revenue office/village secretary. Do the reconnaissance survey of the field along with farmer. Draw a rough sketch showing the survey no., field boundaries on upstream and downstream, waterways, valley portions across the slope, soil depth etc.
- Difference in elevation of the field is to be determined by using Hydro markers or Abney level. Spacing between ditches (35-60 m) is same as that of contour or graded bund for similar soil, climatic and topographical conditions.
- Theoretically, conservation ditches are to be laid out along exact contour points. However, permissible deviations need to be applied to negotiate local valley/depression or ridge so that excessive curvature is avoided. In places where straightening/smoothing of ditch is required, it is suggested that in the valley portions, the ditch sidewall height is suitably raised by filling the valley line.

Recycling of stored runoff water

Ditch holds entire runoff during below normal years and 70-90 % of annual runoff during normal rainfall year. It is advantageous to use the stored water at the earliest for irrigation of the downstream land whenever the situation arises.



He explained the different types of water erosions, such as splash, sheet, gully, and rill erosion. Additionally, he discussed watershed management, rainwater harvesting, and the impact of rainfall velocity and intensity on land and agriculture. We learned about the effects of water on land and the importance of using various technologies to turn challenges into opportunities. Moreover, he enlightened us about the scarcity of fresh water required for agriculture and human

consumption, which constitutes only 3% of the total water available. He emphasized that this limited resource must be conserved and utilized in every possible way to ensure sustainability.

OUR EXPERIENCE

- ❖ Gained knowledge about soil and water conservation techniques.
 - ❖ Informed about RAWA training for bachelor's degree students.
 - ❖ Learned about short-term courses offered by IISWC for B.Sc. Ag students.
 - ❖ Understood the admission process for these programs.
 - ❖ Interaction with experts.
 - ❖ Learned about innovative technologies, including seed calibration.
-
- ❖ Found the courses interesting and are eager to pursue them if given the opportunity

Division of soil science and agronomy IISWC Dehradun



INDIAN INSTITUTE OF REMOTE SENSING (IIRS)

DEHRADUN, UTTRAKHAND

After the unit of IISWC we proceeded for IIRS May 17, 2024, the 7th day of our educational tour. Our visit was explained by Dr. Ashutosh Bhardwaj scientist IIRS. There were adequate seating arrangements for the 20 students and 2 teachers who were with us. Dr. Bhardwaj arrived shortly thereafter and guided us to the exhibition hall.

OBJECTIVE OF VISIT

- ❖ Our primary objective of visiting IIRS is to have a basic knowledge and understanding about the satellites.
- ❖ To know about working of satellites and new research areas of our space agencies.
- ❖ To know about emerging scope and use of satellites in the field of agriculture.



Interaction with scientists of IIRS

BRIEF VISIT OF IIRS

As we entered the Indian Institute of Remote Sensing (IIRS), the first thing we noticed the display of large missile and rocket models to the left of the entry gate. Descriptions of various missions were written on boards nearby. To the right, there was a reception and sitting area.

We waited there for some time, and after 10-15 minutes, Dr. Ashutosh Bhardwaj arrived and escorted us to the exhibition hall. He provided us with information about the satellites developed in India and their achievements, and also showed us models of actual satellites. Additionally, he informed us about the courses offered by the institute and the admission procedure. The institute was established on April 21, 1966, under the Indian Department of Space, specifically under the aegis of the Survey of India (SoI).

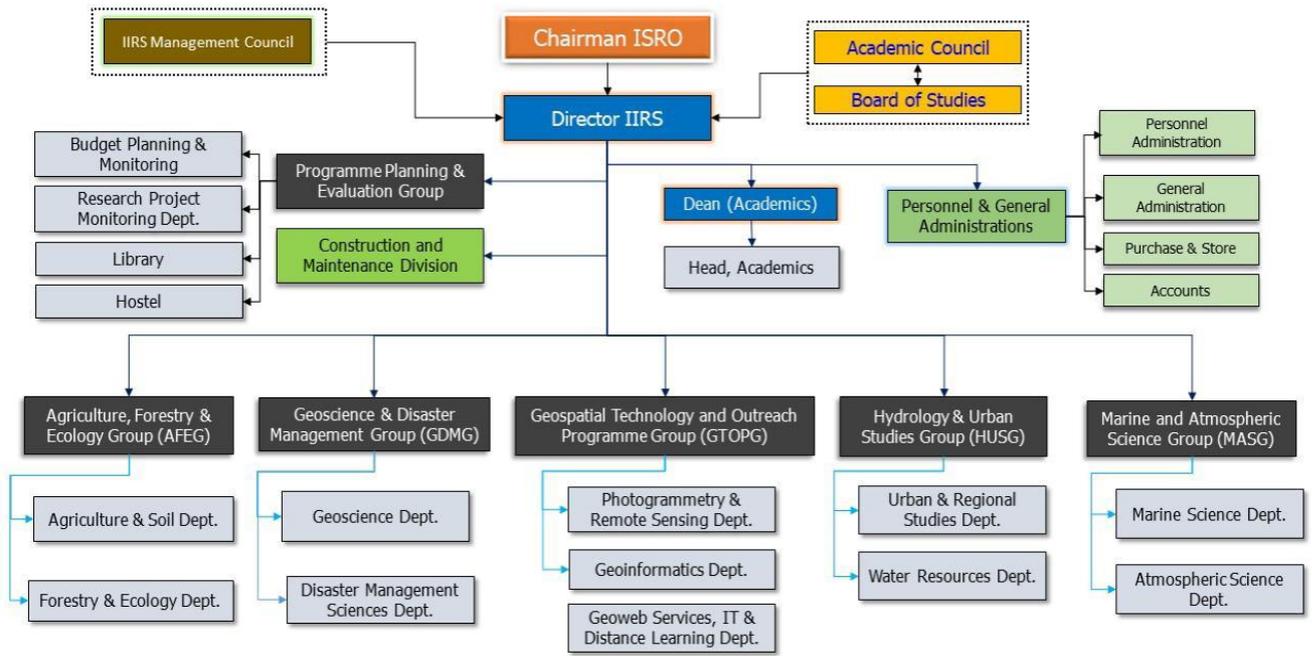


Sir telling us about their achievements and working area

BRIEF ABOUT IIRS

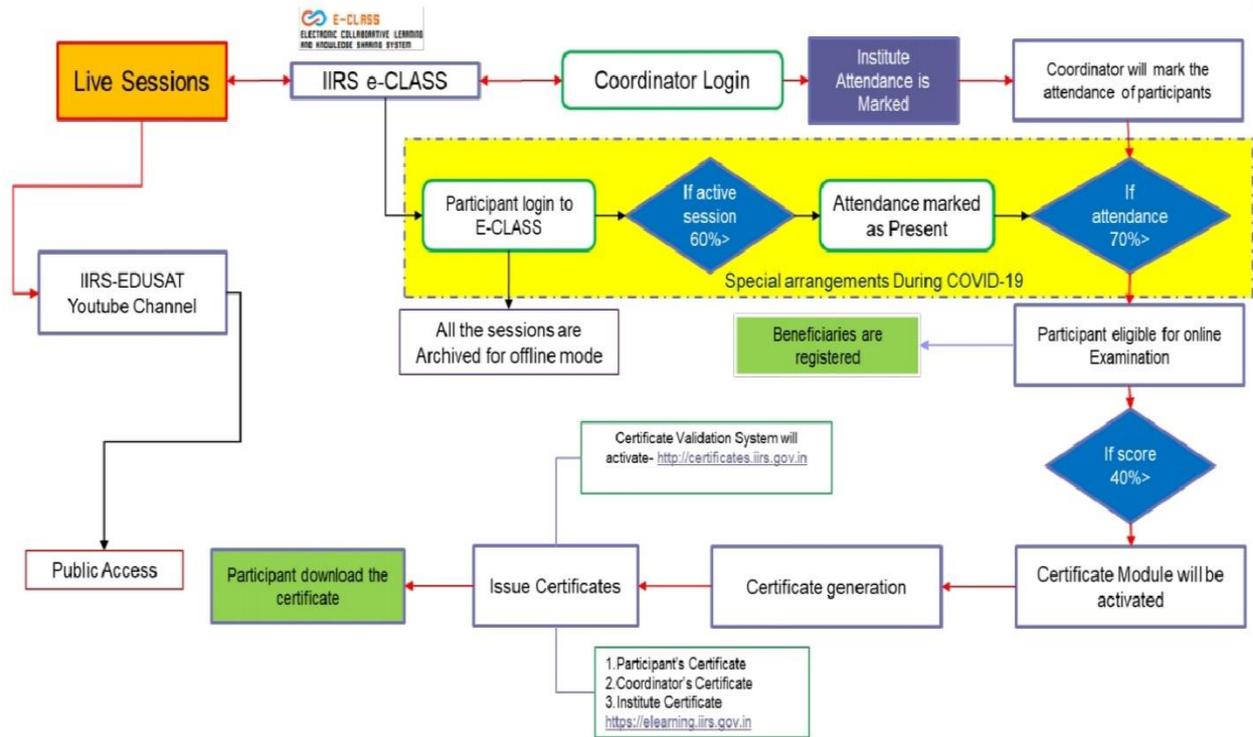
IIRS is the premier institute with the objective of capacity building in Remote Sensing and Geo-informatics and their applications through education and training programmes at postgraduate level. The institute also hosts and provides support to the Centre for Space and technology in Asia and the Pacific(CSSTE-AP), affiliated to the United Nations.

The training and education program of the institute are designed to meet the requirements of various target/user groups, i e., for professional at working, middle and supervisory levels, fresh graduates, researchers, academia, and decision makers. The duration of course ranges from one week to two years.



ORGANISATIONAL STRUCTURE OF IIRS





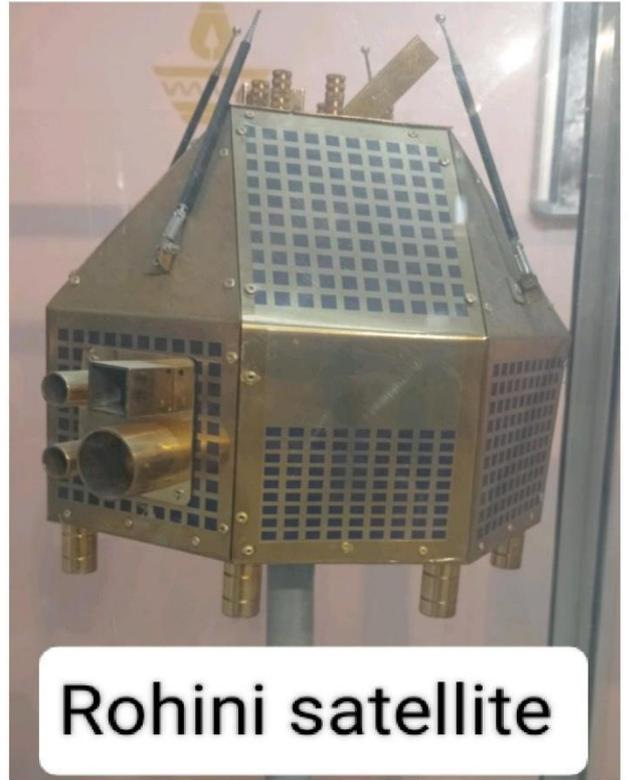
WORKFLOW OF LIVE AND INTERACTIVE COURSES OF IIRS



Exhibition hall of IIRS



Aryabhata



Rohini satellite



RESOURCESAT



OCEANSAT

OUR EXPERIENCE

- ❖ Visiting IIRS is the new and knowledgeable experience for us.

- ❖ We looked at small models of satellites from very close whose size is much smaller than the actual satellite and got more information about the failure and success of Chandrayan mission, which was a new lesson.
- ❖ The scale of the actual size of the satellites is written in the description of those models, from which we can estimate how much bigger the actual satellite is than that model.
- ❖ Most of the parts of the satellites are made of pure gold metal so that it remains safe in space for a long time and there is no problem of corrosion in it. This was a new thing that we came to know.



Main entrance gate of IIRS

FOREST RESEARCH INSTITUTE (FRI) DEHRADUN , UTTARAKHAND

The Forest Research Institute (FRI) in Dehradun, India, is a premier institution for forestry research and education, advancing sustainable forest management and environmental conservation through pioneering research and education. The Forest Research Institute (FRI) in Dehradun was established in 1906. It was founded to address the growing need for scientific research and sustainable management practices in

forestry. Over the years, FRI has evolved into a premier institution, renowned for its contributions to forestry research, education, and policy development both nationally and internationally.

Campus of FRI

OBJECTIVES FOR VISIT

- ❖ Learn about advanced forestry research and methodologies.
- ❖ Understand biodiversity conservation techniques.
- ❖ Study sustainable forest management practices.
- ❖ Gain practical insights through hands-on sessions.
- ❖ Explore the connection between forestry and agriculture.
- ❖ Network with experts and researchers for future collaborations.

BRIEF OF FRI VISIT

Our visit to the Forest Research Institute (FRI), established in 1906, began at 2 PM. We explored several



museums within the institute, which housed a vast collection of different plant and tree species. The museum was large enough to hold an extensive collection of species. The Forest Research Institute (FRI) Museum showcases various aspects of forestry and environmental conservation through its diverse exhibits. Key sections include the Pathology Museum, Silviculture Museum, Entomology Museum, Timber Museum, Non-Wood Forest Products Museum, and Social Forestry Museum. The museum highlights plant diseases, forest insects, timber properties, non-timber forest products, and the role of forests in community welfare. It features historical artifacts, educational displays, biodiversity exhibits, and emphasizes environmental conservation and sustainable forest management, making it a valuable resource for students, researchers, and tourists alike. The campus is famous for its beauty and architecture, and a Bollywood movie named "Student of the Year" was filmed here.

MISSION AND OBJECTIVES

The mission of the Forest Research Institute (FRI) in Dehradun is to conduct cutting-edge research in forestry and allied sciences, contributing to the sustainable management and conservation of forest resources. Established with the objective of advancing knowledge in forest ecosystems, FRI aims to develop innovative technologies and methodologies for forest management and biodiversity conservation. Through its research, FRI seeks to address environmental challenges, promote sustainable livelihoods dependent on

forests, and provide science-based solutions to policymakers and stakeholders. The institute also emphasizes education and capacity building, nurturing future leaders in forestry and environmental sciences to tackle global challenges related to climate change, biodiversity loss, and sustainable development.



RESEARCH AREAS OF FRI

- ❖ Research areas of FRI include:
- ❖ Forest Biodiversity and Conservation
- ❖ Forest Ecology and Ecosystem Services
- ❖ Silviculture and Forest Management
- ❖ Forest Genetics and Tree Improvement
- ❖ Forest Entomology and Pathology
- ❖ Agroforestry and Social Forestry
- ❖ Climate Change Adaptation and Mitigation
- ❖ Wildlife Biology and Conservation
- ❖ Forest Policy and Governance

- ❖ Forest Economics and Sustainable Development

OUR EXPERIENCE

Based on the activities at FRI, our experience was:

- ❖ Observed a diverse array of tree species on campus.
- ❖ Visited museums with numerous tree specimens, including rare species.
- ❖ Learned from four museums displaying various forest-related artifacts.
- ❖ Inspired respect for sustainable forest management and preservation.

SITE VISIT

MALL ROAD, MUSSORIE: THE QUEEN OF HILLS



Entry gate Mall road

INTRODUCTION

We were very excited to go to Mussoorie because till now we had only heard about the beauty of Mussoorie but today we were going to visit there ourselves. we left for Mussoorie from IISWC, Dehradun on 17th march at 4:00pm via traveller and we reached Mussoorie around 5:15 . Mall road is the heart of Mussoorie, a picturesque hill station in the Indian state of Uttarakhand. The road stretches across the town , offering stunning views of the surrounding hills and valleys.It is about 35 kilometer from the state Capital of Dehradun & 290km North of the national capital of new Delhi.

HISTORICAL SIGNIFICANCE

Mussoorie mall road is a historic street that was build by the Britishers during their rule in India. The architecture of many buildings and historical landmark such as Christ Church reflects the colonial style, adding the nostalgic charm of the area.

SCENIC BEAUTY

the road offers breath-taking views of the Doon valley and the surrounding hills. During the evening, the road comes alive with lights, creating a magical ambience. The cool climate and fresh mountain air make it a perfect place for leisure time. Mussoorie mainly famous for its cool climate . Photography is also a must do activity in mall road for visitors. You can capture the beauty & charm of the streets & it's surrounding, you can take some amazing shots of the colonial architecture and colourful shops.

Scenic beauty of Mussoorie



TOURIST ATTRACTION

you will find several attractive places in Mussoorie. Landour bazaar, gun hill and camels back road are easily accessible from mall road. Gun hill, the second highest point in Mussoorie, offers the most beautiful views of the Himalayan ranges and it is a perfect spot for photographers and nature lovers.

SHOPPING & DINNING

Shopping at mall road Mussoorie is one of the most popular activities among visitors. You can find various shops and stalls at Mussoorie mall road that sell local handicrafts, woolen clothes, jewelery, cosmetics and huge collection of expensive perfumes. The area is also dotted with numerous cafes and restaurants, visitors can enjoy delicious food in the many eateries along the road.



Market view of Mall road

ACTIVITIES

- ❖ We explored different local shops, cafes and eateries here.
- ❖ Did lot of shopping here.
- ❖ We have enjoyed some street food and “ pahadon wail Maggi” of mussoorie.
- ❖ Went to Sai mandir and got laddo as Prasad.
- ❖ We took lots of pictures and selfies with friends and also captured the scenic beauty of mall road , mountain and breathing Himalayan views.



Pahadon wali maggi

OUR EXPERIENCE

- ❖ We felt the hilarious beauty of Mussoorie, the beauty of Mussoorie have a magical power to attract people.
- ❖ Managing time effectively to balance activities and exploration & adapting to crowded and busy market areas.

- ❖ Adapting to high altitude and weather conditions.



DAY- 09
19 MAY 2024
RED FORT

We arrived Delhi on 19 May 2024, Sunday at morning. As Sunday was not working day of all education and research institute we planned to visit famous monuments in Delhi

OBJECTIVE

The objective of the visit was to provide students with a deeper understanding of India's history, national pride, and the significance of the memorial. The tour aimed to instill a sense of patriotism and unity, and its importance in development of the nation.



LAL QILA, NEW DELHI

INTRODUCTION:

Red Fort, popularly known as **Lal Qila**, situated at netaji subhash marg lal qila chandani chowk was constructed by Shah Jahan in the 17th Century. The fort complex served as the residence of Mughal Emperors for nearly 200 years, until 1857. It was designed by architect Ustad Ahmad Lahauri and Ustad Hamid, the fort lies along the Yamuna River. Its construction began in the sacred month of Muharram, on 13 May 1638, and was completed in 1648. It has a perimeter of 2.41 km. The fort is built using red sandstone and has an oblong octagonal plan. It has 2 principal gates Lahore Darwaza and Delhi Darwaza along its western and southern sides respectively.

Architecture:



The Red Fort has an area of 254.67 acres (103.06 ha) enclosed by 2.41 kilometres (1.50 mi) of defensive walls, punctuated by turrets and bastions and varying in height from 18 metres (59 ft) on the river side to

33 metres (108 ft) on the city side. The fort is octagonal, with the north-south axis longer than the east-west axis. The marble, floral decorations and double domes in the fort's buildings exemplify later Mughal architecture. It showcases a high level of ornamentation, and the Kohinoor diamond was reportedly part of the furnishings. The fort's artwork synthesizes Persian, European and Indian art, resulting in a unique Shahjahani style rich in form, expression and color.

Red Fort is one of the building complexes of India encapsulating a long period of history and its arts. Even before its 1913 commemoration as a monument of national importance, efforts were made to preserve it for posterity. The Lahori and Delhi Gates were used by the public, and the Khizrabad Gate was for the emperor. The Lahore Gate is the main entrance, leading to a domed shopping area known as the Chatta Chowk (covered bazaar).

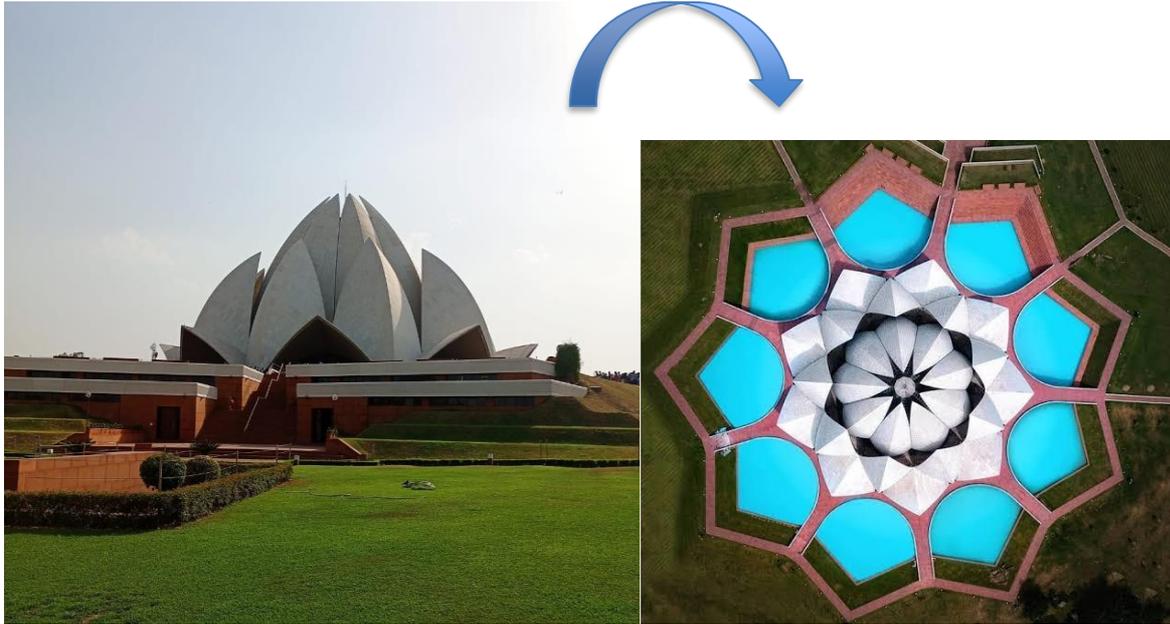
ACTIVITIES:

- ❖ Visiting the Red Fort in Delhi was a captivating experience that took us back in time to the grandeur of the Mughal era. Here's what we experienced during our visit:
- ❖ As we approach the Red Fort, we were awe-struck by its magnificent red sandstone walls and imposing entrance gates. The sheer size and architectural beauty of the fort creates a sense of anticipation and excitement.
- ❖ Stepping through the Lahori Gate, we entered the bustling complex of the Red Fort. The gate is adorned with intricate designs and calligraphy, serving as a testament to the architectural prowess of the Mughals.

Our Experience

- ❖ We visited the Red Fort, a magnificent site with buildings constructed from red sandstone. Many visitors were taking photographs in front of the historic structures, and we took numerous photos as well. Nearby, there was a market known for its affordable prices, the famous Chandni Chowk market.
- ❖ Approximately 1500 meters away, we could see the Jama Masjid, visible from a distance of about 200 meters. After capturing our photos, we prepared to visit the next destination, as our bus was ready to pick us up from the roadside.
- ❖ We saw Lahori gate, Delhi gate, Rang Mahal, Mumtaz Mahal, octagonal shape etc.

Lotus Temple



Lotus temple with its structure

OBJECTIVE

The objective of the visit was to provide students with an opportunity to explore cultural and architectural heritage, gain insights into traditional craftsmanship, and understand the importance of preserving cultural values. The tour aimed to broaden our perspectives and instill a sense of appreciation for art and culture.

INTRODUCTION

The Lotus Temple, located in New Delhi, India, is a Bahá'í House of Worship that was completed in 1986. The temple is notable for its distinctive flowerlike shape, with 27 free-standing marble-clad "petals" arranged in clusters to form nine sides.

Designed by Iranian architect **Fariborz Sahba**, the temple's construction took over six years, involving 800 workers. The temple is set among lush gardens and pools, symbolizing the Baha'i faith's emphasis on unity and harmony. The Bahá'í faith, founded in the 19th century by Bahá'u'lláh in Persia, emphasizes the spiritual unity of all humankind. The Lotus Temple embodies this principle, welcoming people of all religions to meditate and pray in its serene environment.

Since its opening, the Lotus Temple has become one of New Delhi's major attractions, drawing millions of visitors annually with its unique architecture and peaceful ambiance.

Location: ; Lotus Temple Road, Shambhu Dayal Bagh, bahapur, Kalkaji, New Delhi

* **Lotus Temple Timings:**

| Seasons | Opening Time | Closing Time |
|---------|--------------|--------------|
| Summer | 9:00 AM | 7:00 PM |
| Winters | 9:30 AM | 5:30 PM |

Open Tuesday – Sunday

Closed: Monday

* Entry and Parking: Free

* Lotus Temple Nearest Metro Station: Kalkaji Mandir (Violet Line)

Structure:



The Lotus Temple's structure is inspired by the lotus flower, a symbol of purity and serenity, Here are the key details of its design and construction:

1. Architecture

- ❖ Designer: Fariborz Sahba, an Iranian architect.
- ❖ Shape: The temple's design resembles a lotus flower with 27 marble "petals" arranged in three clusters of nine.
- ❖ Materials: The petals are made of white marble from the Penteli Mountain in Greece, the same marble used in ancient monuments like the Parthenon.

2. Structure

- ❖ Main Hall: The central hall, capable of accommodating 2,500 people, is 34.27 meters (112.4 feet) high.
- ❖ Petals: The 27 petals are arranged in three ranks around the central hall. The outermost petals form nine entrances to the temple.
- ❖ Foundation: The temple is set on a base made of red sandstone, which raises it above the surrounding gardens and pools.

3. Surroundings

- ❖ Gardens: The temple is surrounded by 26 acres of landscaped gardens and nine reflecting pools, which enhance its serene and contemplative atmosphere
- ❖ Pools: The nine pools around the temple represent the green leaves of the lotus flower

4. Symbolism:

- ❖ Unity: The nine sides of the temple and its central dome signify the unity of all religions and mankind.

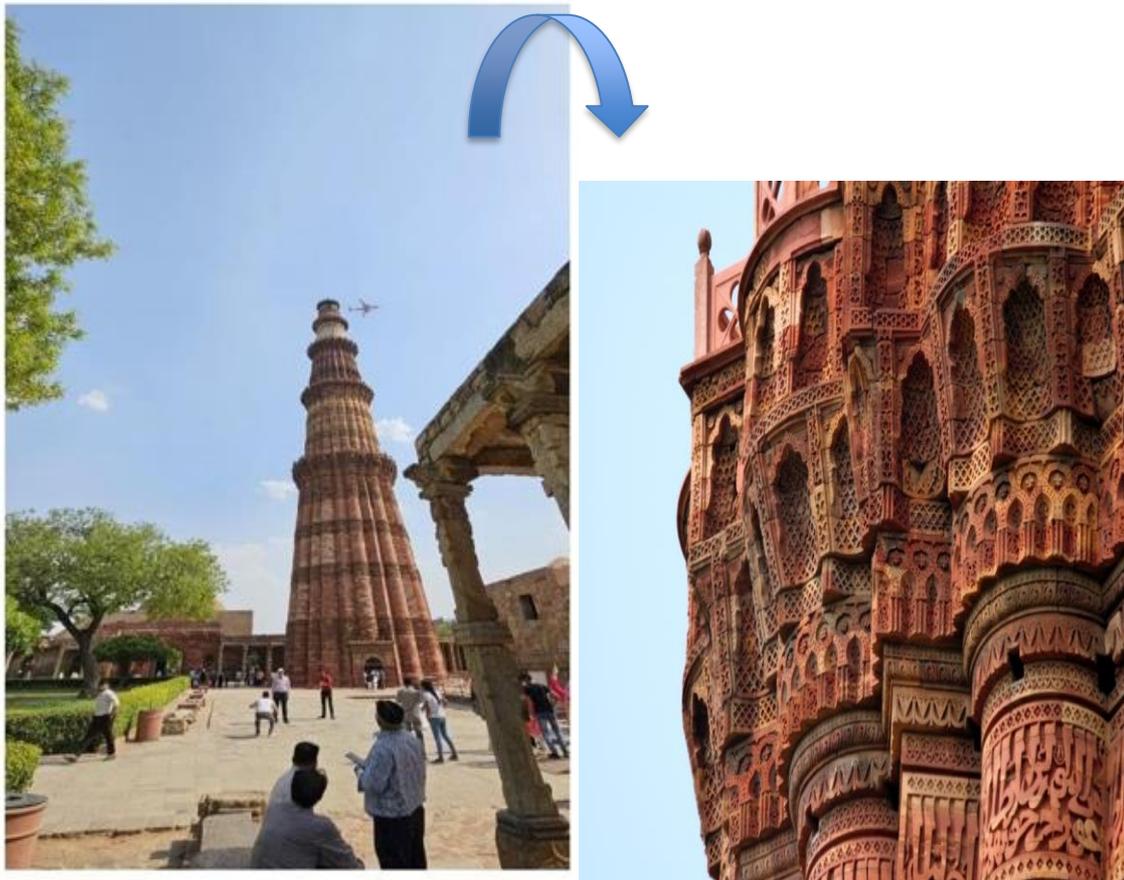
- ❖ The Lotus Temple's design is not only aesthetically striking but also imbued with deep symbolic meaning, reflecting the principles of the Bahá'í faith.

Our Experience

- ❖ We visited lotus temple their a tourist guider interrect with us he explained about the structure, surroundings, areas, of the lotus temple.
- ❖ After visiting the lotus temple we found ourself feeling a sences of tranquility and peace.
- ❖ We also appreciate the opportunity for silent meditation or prayer at Lotus temple.

NOTE:Group photos of student are not attached because taking photographs were prohibited

VISIT- 3 Qutub Minar



OBJECTIVE:

The objective of the visit was to provide students with a deeper understanding of India's rich historical and cultural heritage, specifically related to the Mughal era. The tour aimed to enhance the student's knowledge of architectural marvels, its historical significance, and the role of agriculture in the past.

INTRODUCTION:

Qutub Minar is one of the major historical buildings of the country. It is located in Mehrauli area of South Delhi. The Qutub Minar with a height of about 238 feet is the tallest stone pillar in India. Qutub Minar is surrounded by many other monuments located around it and this whole complex is called Qutub Complex. Qutub Minar is believed to have been built during 1199 to 1220. The construction of Qutub Minar was Built by Qutbuddin-Aibak and completed by his successor Iltutmish.

Qutbuddin Albak was the favorite slave and general of Muhammad Ghori who defeated Prithviraj Chauhan, Ghori returned after handing over the administration of Delhi and Ajmer to Aibak. After Ghori's death in 1206, Aibak became an independent ruler and established the Delhi Sultanate.

The Qutub Minar was damaged by lightning and earthquakes in the 14th and 15th centuries. Earlier its top two storeys were repaired by Firoz Shah Tughlaq. It was extensively renovated in 1505 by Sikandar Lodi and its upper two storeys were extended. An earthquake in 1803 again damaged the Qutub Minar. Then in 1814 its affected parts were repaired by Major Robert Smith of the British- Indian Army.

Structure:



1. Construction:

- ❖ Commissioned: Qutub-ud-Din Aibak initiated the construction in 1193, and it was completed by his successor, Iltutmish, in 1220. Later, in the 14th century, Firoz Shah Tughlaq added the fifth and final storey.
- ❖ Material: The minaret is primarily built from red sandstone, with marble used in the upper storeys.

2. Dimensions:

- ❖ Height: The Qutub Minar stands at 72.5 meters (238 feet), making it the tallest brick minaret in the world.
- ❖ Diameter: The base diameter is 14.3 meters (47 feet), tapering to 2.7 meters (9 feet) at the top.

3. Architecture:

- ❖ Structure: The minaret has five distinct storeys, each marked by a projecting balcony. The first three storeys are made of red sandstone, while the fourth and fifth storeys are a mix of marble and sandstone.
- ❖ Design: The exterior is intricately carved with Quranic texts and decorative motifs, including floral patterns and geometric designs.

4. Repairs and Additions:

- ❖ Over the centuries, the Qutub Minar has undergone several repairs and renovations due to damage caused by lightning and earthquakes. The most notable repairs were carried out by Firoz Shah Tughlaq and the British in the 19th century.
- ❖ The Qutub Minar is a UNESCO World Heritage Site and remains a testament to the architectural ingenuity and craftsmanship of the early medieval period in India.

Features

1. Iron Pillar –



Loh Stambh or Iron Pillar is a wonderful historical monument which surprises all the historians and tourists. The pillar is believed to have been built during the reign of Chandragupta II, a king of the Gupta dynasty between the 3rd and 4th centuries. This 7 meter tall pillar is also popularly called "Kirti Stambha which is dedicated to Lord Vishnu in the form of a flag. The most interesting feature of this pillar is that despite being built many centuries ago, it has not rusted. It is a big mystery that this pillar has not rusted till date.

2. Tomb of Iltutmish-

The tomb of Iltutmish is a monument located in the north eastern part of the Qutb complex and is one of the most important ancient monuments of Delhi. Iltutmish was the son-in-law of Qutb-ud-din Aibak, the first ruler of the Slave dynasty in India, who was the second Sultan of the Delhi Sultanate. This mausoleum was built by Shamsuddin Iltutmish in the year 1235 and is situated to the north west of the Quwwatul Islam Mosque in Delhi. The tomb of Iltutmish is visited by many tourists and history lovers throughout the year and gets mesmerized by the architecture of this beautiful structure.

3. Alai Minar-

The Alai Minar, located within the Qutub Complex, is a separate structure as its construction was left unfinished. The construction of this minaret was started by Alauddin Khilji as a project to build a minaret higher than the Qutub Minar. Alauddin Khilji was a highly ambitious ruler and wanted to build a tower twice the size of the Qutub Minar. But this ambition remained unfulfilled and its construction ended with his death in 1316. Today Alai Minar stands at a height of 24.5 meters and attracts all onlookers.

4. Quwwat-ul-Islam Mosque:



The Quwwat-ul-Islam Mosque, located within the Qutub Complex, is an important historical structure which was built by Qutub-ud-din Aibak. This mosque

Our Experience

- ❖ We visited the Qutub Minar, where tickets are required for entry. Visitors from other countries also come to see this historical site.

- ❖ We interacted and met with foreigners talking with them are very impressive or greatful for us .
- ❖ We also saw aeroplane at every minutes, very near to the qutub minar as the international airports situated near it.

Day 10

Date: 20th May 2024

National Bureau of Plant Genetic Resource (NBPGR)

OBJECTIVE:

The objective of the visit was to provide the students with practical exposure to plant genetic resources conservation, research, and the importance of biodiversity in agriculture. The tour aimed to enhance the students' understanding of plant genetic resources management and its significance in sustainable agriculture.



Interaction with senior scientist of NBPGR

DETAILS OF VISIT

We visited the NBPGR where we were warmly welcomed and interacted by Dr. Subhas Chande (Soft SS Economic Rotana/PGR Director of Germplasm Conservation), where he gave a brief introduction about the establishment, main objectives and mandate, main activities and facilities provided by NBPGR. All are explained below -

- ❖ NBPGR is a unit under ICAR, Dept. of Agricultural Research and Education (DARE), Ministry of Agriculture, Govt. of India.
- ❖ Established at: 1976 as a full-fledged Institute
- ❖ It has the 2nd largest gene bank in Asia. {NOTE: 1st largest gene bank is at NORVEY.}
- ❖ National Gene Bank: established at 1983.
- ❖ NBPGR is linked to more than 100 countries

MAIN ACTIVITIES PERFORMED BY NBPGR:

- ❖ Germplasm collection
- ❖ Plant quarantine
- ❖ Germplasm exchange
- ❖ Germplasm conservation
- ❖ Documentation
- ❖ Human resource development
- ❖ Germplasm characterization and evaluation



Inside museum of NBPR





Germplasm conservation exhibited in NBPGR museum

Facilities of NBPGR

- ❖ Gene Bank (Total accession: 481404)
- ❖ 1 Medium Term Storage (for 10-20 years Temp. -4 degree C)
- ❖ 12 Long Term Storage (orthodox seed for 100 yrs Temp. -18 degree C) (Cryopreservation)

Packaging of germplasm (in 3-layer vacuum sealed):

- ❖ Polythene
- ❖ Aluminium
- ❖ Polyester
- ❖ IC No. for indigeneous conservation
- ❖ EC No. for exotic conservation

► Location of centre: Pusa, New Delhi-110012

- ❖ **Latitude:** 28-degree 35' N
- ❖ **Longitude:** 70-degree 18° E
- ❖ **Altitude:** 226 m above mean sea level

► Important/Attractive place of the centre:

- ❖ National Gene Bank
- ❖ LPGR Museum
- ❖ MTS and LTS

➤ **Technology generated by the centre:**

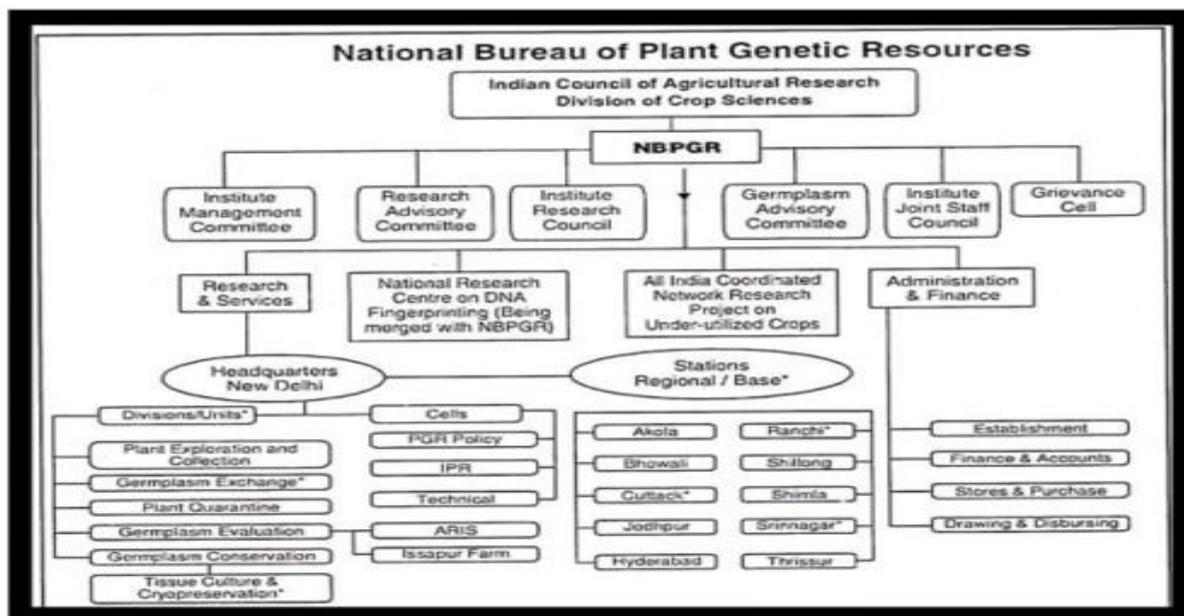
- ❖ Application of DNA-based markers to differentiate citrus root stocks
- ❖ Technology for differentiate of two majors commercially cultivated Bt cotton events, Bollgard IR (MON531) and Bollard II R (MON15985)
- ❖ History
- ❖ 1935-Realization of need by the Crops and Soil Wing of the then Board of Agriculture and Animal Husbandry to establish an organization to carry out plant introduction activities.
- ❖ 1937-Emphasizing the importance of crop germplasm by late Dr. B.P. Pal in his classic paper "Search for New Genes".



FOLLOWING PALCES WERE SHOWN BY HIM.

- ❖ **Gene bank:**
 - We were shown a model of the gene bank facility at NBPGR. We learned about the various methods and techniques employed for the collection, characterization, evaluation, and storage of plant genetic resources. We observed the models of seed processing and storage procedures, including the cold storage chambers and seed vaults.
 - The scientists explained the importance of maintaining genetic diversity for crop improvement, resilience, and food security.
- ❖ **Herbarium and Germplasm Documentation:**
 - We also learnt about the herbarium and germplasm documentation section. We learned about the process of collecting, cataloguing, and preserving plant specimens.

Structure:



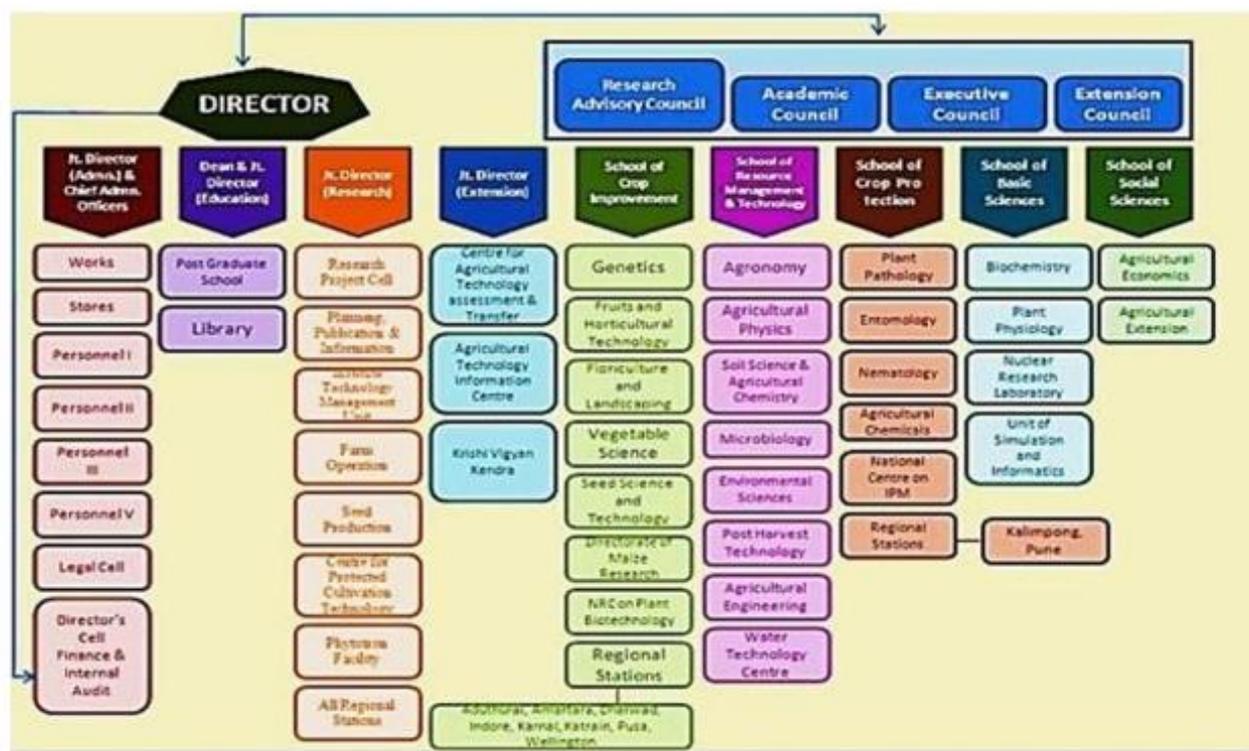
OUR EXPERIENCE

- ❖ We visited the NBPGR which provided insights with practical exposure to plant genetic resources.
- ❖ The visit deepened our understanding of the importance of biodiversity in agriculture, genetic resource management and the challenges faced in sustainable crop improvement.
- ❖ The tour inspired us to actively engage in the conservation and utilisation of plants genetic resources for the agriculture development

20/05/2024(Monday)

ICAR –Indian Agricultural Research Institute (IARI, Delhi)

Organization setup of IARI



OBJECTIVE:

- ❖ The aim of the educational tour to IARI in New Delhi, is to provide students with practical Knowledge and Exposure to agricultural research and development.
- ❖ The Indian Agricultural Research Institute (IARI) is a premier agricultural research and education institution in India. Here's an overview of the Indian Agricultural Research Institute:

► **Introduction and Establishment:** The Indian Agricultural Research Institute was established on April 1, 1905, as the Imperial Agricultural Research Institute. It was renamed the Indian Agricultural Research Institute in 1936. It is located in New Delhi, India.



Division of National Bureau of Soil Survey & Land Use Planning

ACTIVITIES -

Welcomes- Firstly welcomed and Interacting with Scientist

Dr. Shrawan Singh, Division-vegetable science, Specialization - Genetics (Improvement of cucumber and cauliflower).

Activity-I- The trip to IARI began with the visit to Integrated Farming system module. It consist of fishery, duckery, poultry along with the fruit trees, diff. types of vegetables, and cereal crops. The Scientist Explained the students about the Importance and benefits of Integrated farming in making the farmers self-reliable.

Activity-II- There after students witnessed to see Bia gas plant which provides methane gas for cooking and lighting their homes.

Activity-III- There after students visited "Research farm" and there Interacting with Dr. Arjun Singh, Scientist, division Agronomy, they shown various crops on fans and explained bajra has high nutritional value and is a reservoir of calcium, Iron, zinc and phosphate and is extremely good for diabetic people.

Activity-IV- There after students went to maize field and there the Scientist shown the male and female parts of maize plants and how pollination occurs in it.



Experience

- ❖ Location - At the center of Delhi best place to live The as you are in equidistant from all areas.
- ❖ Academics - students are the best in their disciplines and are here through accessing the entrance exam.



