

FATIMA MATA NATIONAL COLLEGE

AUTONOMOUS

(Reaccredited with 'A' Grade by NAAC)

Affiliated to University of Kerala



2.3.1 Research Station Visits

IQAC INTERNAL QUALITY ASSURANCE CELL

KERALA FOREST RESEARCH INSTITUTE (KFRI), PEECHI, THRISSUR

BSc sixth semester of Post Graduate and Research Department of Botany, Fatima Mata National College organized a study tour as part of academic curriculum. The tour commenced on 22.03.2022 and lasted till 25.03.2022. It was being planned and coordinated by the teachers of the Department of Botany. A total strength of 55 including 52 students, two teachers and one non-teaching staff participated in the venture.

The students were guided by Dr. (Sr.) Sofia S, Assistant Professor and Dr. Dintu K P, Assistant Professor, a non-teaching staff was Mr. Nixon A. Students gained valuable informations about plants and taxonomy through this intensive study tour.

Kerala Forest Research Institute (KFRI) is a multidisciplinary team of experts conducting research on tropical forests and forestry. This Institute has contributed significantly to research in tropical forestry and biodiversity conservation over the past three decades of its existence. Founded in 1975, Institute is envisioned as a Centre of Excellence in Tropical Forestry to provide scientific support for decision making on matters related to forestry, with particular emphasis on conservation, sustainable utilization and scientific management of natural resources.

Firstly, we visited herbarium. Dr. V B Sreekumar, Scientist explained the herbarium preparation methods. It holds over 11,074 specimens and recognized internationally by the acronym 'KFRI' by the International Association of Plant Taxonomists (IAPT). Apart from general collections, KFRI herbarium has a complete collection of medicinal plants in South India and a pan Indian collection of palms and bamboos of India including Andaman and Nicobar Islands. The species in the herbaria are indexed in alphabetical order with collection numbers under respective plant families. The families are arranged according to the system of classification of flowering plants by Bentham and Hooker with delimitation to certain families in accordance with their current concepts.

The 11,074 specimens representing more than 2,200 species form 159 families. The predominant plant families in the collection are *Graminae* (203 spp.), *Orchidaceae* (184

spp.), *Arecaceae* (118spp.), *Fabaceae* (115spp.), *Euphorbiaceae* (107spp.), *Rubiaceae* (80sp p.) and *Compositae* (52 spp.). The herbarium also represented with 90 species of pteridophytes.

Next, we visited palmetum of KFRI. Palmetum is a live collection of indigenous and exotic palms, which serves as a facility for educating the public about the need for conservation of palms. Palms are woody monocotyledons coming under the family *Arecaceae* (*Palmae*). KFRI Palmetum was established in Peechi Campus in 2000 which contains 145 species of palms under 52 genera. Of these, 80 are indigenous palms and 65 are exotic species with 8 species are Critically Endangered, 9 Endangered, 8 Vulnerable and 23 Near Threatened categories as per IUCN standards. The exotic species include those which are commonly found in Indian parks, gardens and along avenues. The rare species like *Hyphaene dichotoma*, *Bentinckia condapanna*, *Bentinckia nicobarica*, *Rhopaloblaste augusta*, *Calamus nagbettaii*, *C.brandisii*, *C. andamanicus*, *C. vattayila*, *Wallichia disticha*, *W.nana*, *Korthalsia laciniosa*, *Korthalsia rogersii*, *Licuala spinosa* and mangrove species like *Phoenix paludosa* and *Nypa fruticans* are also represented in the collection.



Jawaharlal Nehru Tropical Botanical Garden and Research Institute

Palode, Thiruvananthapuram

The II MSc Botany students of FMNC undertook a field visit on 10th of March 2022 to Jawaharlal Nehru Tropical Botanical Garden and Research Institute (JNTBGRI) and Ponmudi. The Head of Department of Botany Dr. Nirmala Jayarani and Class in charge Dr. Rubin Jose accompanied the students.

The purpose of the visit was to provide the students with hands-on experience in botanical exploration and to deepen their understanding of plant diversity, ecological interactions, and field research techniques.

Jawaharlal Nehru Tropical Botanical Garden and Research Institute formerly called Tropical Botanical Garden and Research Institute renamed to the memory of visionary Prime Minister of India Sree Pandit Jawaharlal Nehru. It is an Autonomous Institute established by the Government of Kerala on 17 November 1979 at Thiruvananthapuram, the capital city of Kerala. The first visit was to the Biotechnology and Bioinformatics Labs and National Gene bank. The sight of the greenery calmed and increased enthusiasm towards nature. There were many conservatories of xerophytes, fruit trees, medicinal plants etc present on either side of the road.



Dr. Abdul Jabbar gave a detailed description about the Gene Bank and its importance. His valuable words taught about the Gene Bank maintained in the institution. His words gave us knowledge about the modern technologies for the protection and conservation of endangered, vulnerable, rare and endemic plant. He talked about the ways to conserve the plants through Gene Bank and how different plants are conserved in India.

There are three major centers in India for the conservation of plants, Central Institute of Medicinal and Aromatic Plants (CIMAP), Luknow, National Bureau of Plant Genetic Resources (NBPGR), Pusa, New Delhi. and JNTBGRI. Former ones conserve the crop plants while JNTBGRI is concerned with the conservation of medicinal plants. They are usually four components in the conservation like seed, pollen, cryo and field. In accordance to these four components, there are four kinds of preservations, Pollen preservation, Seed preservation, Cryo- preservation and Field preservation. Pollen preservation means the pollen of the plants were preserved which can be make the use for the development of plants. Cryo-preservation uses liquid Nitrogen to preserve the plant of plant parts at -195°C . They can be preserved according to a standardized model for the preservation of the particular plant. In Seed preservation the seed of the plant is preserved in dry atmosphere so that they will stay at the state of dormancy and can be preserved for many years. F

Field preservation is a kind of preservation is done by planting the endangered and endemic plants in the different conserved fields to protect it from extinction. Thus, are can preserve any endemic, threatened, culturable, endangered plant in this manner. One example: *Janakia arayalpathra*, a rare endemic plant found in the southern forest of Western Ghats regions of Kerala is used by the Kani tribes as effective remedy for peptic cancer like afflictions and as a rejuvenating tonic. This is referred to as Mritha Sanjeevani or Sanjeevani or *Thampea rasayani* in Ayurveda books. Such plant which is present only at certain part and was a very high medicinal values are useful for mankind, should be

protected before it is endangered due to the various climatic or human interventions. Once conserved are can used it for production of other medicines without fear of it being extinct. For such preservations, medicinal plants with elite genotype should to chosen. According to the morphological, cytological, ecological and chemical creations of the plants.

Example: *Bacopa monneri* is present at different places of Kerala. The active compound is bacopin. Bacopin content in the plant is checked at different places and the one which has the highest percentage of bacopin for several generations is multiplied while the rest of the accession is conserved.

Acorus calamus the cultivated plant is diploid while the one which is wild is carcinogenic and cannot be used.

The next destination was the biotechnology lab at JNTBGRI, where a brief account of the biotechnical advancements in the field of Botany was given. Later the visit was to the tissue culture lab and molecular biology lab, to understand about the various instruments used in Tissue Culture, DNA extraction etc. It was a good chance to see the plant growth using different Tissue Culture medium and to know more about the culture medium and the usage of charcoal in the culture medium etc.





Then the visit was to the Molecular Biology lab where equipments like the water bath, thermo cycler, PCR, Real time PCR etc. are were explained by the staff the use of each of the instruments in the lab.