SHIKSHAN PRASARAK MANDAL'S,

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Project Name:- Lead Botanical Garden as a Place for Learning plant Science.

This is to certify that, Mr. /Mrs. SUTAR SAMRUDDHI SANJAY. ***Class*** B.Voc-III ***has successfully completed Project work prescribed by B. Voc. in*** ***Sustainable Agriculture Management*** ***of Shivaji University, Kolhapur at Gopal Krishna Gokhale College, Kolhapur and submitted the report for Experiential Learning.***

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G. K. GOKHALE COLLEGE KOLHAPUR

Experiential Learning: Lead Botanical Garden as a Place for Learning Plant Science.

Botanic garden is associated with environment conservation, outdoor recreation and education programme for students. The learning opportunities that take place in the garden functions as a window of knowledge, a platform to build better understanding beside aroused cognitive skills during visitation. This study is aimed to identify the potential of Putrajaya Botanical Garden as a learning environment. The finding showed the male respondents rated higher than the female in all attributes associated with experiential learning at the garden. With good practice of design and management, this garden can continuously serve as successful educational learning environment and achieve its mission. Keywords: Experiential learning; leisure setting; botanic garden; educational learning environment

Introduction

India has long history of conservation through worshipping trees, forests, mountains in cultural and religious ceremonies. The world's first conservation measure was enacted in India by Emperor Ashoka in 3rd Century B.C. The principles for nature or wildlife protection and punishment for its violence were laid down by Kautillya (321–297 B.C.). I*n-situ* conservation strategies in the form of 'Reserve Forest' system was introduced by British rulers before independence in India. In–situ conservation is best way to conserve species but every habitat cannot be protected hence we need ex-situ conservation measures. Botanic gardens play a key role in ex-situ conservation of endangered plants, preservation of seeds and propagules in seed banks. Botanical gardens preserve valuable germplasm which is the product of million years of evolution.

According to Jackson (1999) *"Botanic gardens are* institutions holding documented collections of living plants for the purpose of scientific research, conservation, display and education". The first botanic garden working in science and education was of Theophrastus which is attached to his school at Greece. The credit of development of first modern botanic garden in 1543 goes to an Italian researcher Luca Ghini at University of Pisa. The first botanical garden in India was established in 1787 at Calcutta as Indian Botanic Garden. Today India represents a chain of botanical gardens distributed in all the regions of the country. After the ratification of CBD by India MoEF and state forest departments launched various schemes like "National Action Plan on Biodiversity Conservation, Capacity Building in Taxonomy, Assistance to Botanic Gardens" etc. Presently total botanic gardens

listed by BGCI are 1846 distributed in 148 countries. They maintain 4 million living plants representing about 80,000 species along with other collections in the form of herbaria and seed banks. The botanical gardens throughout the world have accepted the challenge of undertaking a global mission for conservation through wide range of programmers' such as collection, research, education and public awareness. Thus, they play crucial role as centers for rescue, recovery and rehabilitation of rare, endangered and extinction prone species of vascular plants. The botanic gardens also play an important role in education as a center of training in areas such as horticulture, gardening, landscaping, *ex-situ* conservation and environmental awareness

Study Area

The Botany Department was established in 1964 which is spread over 1700 m^2 area. The Department has old botanical garden in 6 acres of land. Along with this a new botanical garden adjacent to the department was established. It is systematically developed with generous financial support from various funding agencies. In addition, the University has given an area of 30 acres for the development of Botanical Garden. One of the author (S. R. Yadav) has taken painstaking efforts for conservation of rare and indigenous flora through development of botanical garden. Taking into account the contributions in the field of biodiversity conservation Ministry of Environment and Forests, Govt. of India has recognized the Botanical Garden of the Department as "Lead Botanic Garden" for Western India in September 2008.

Outlay of garden

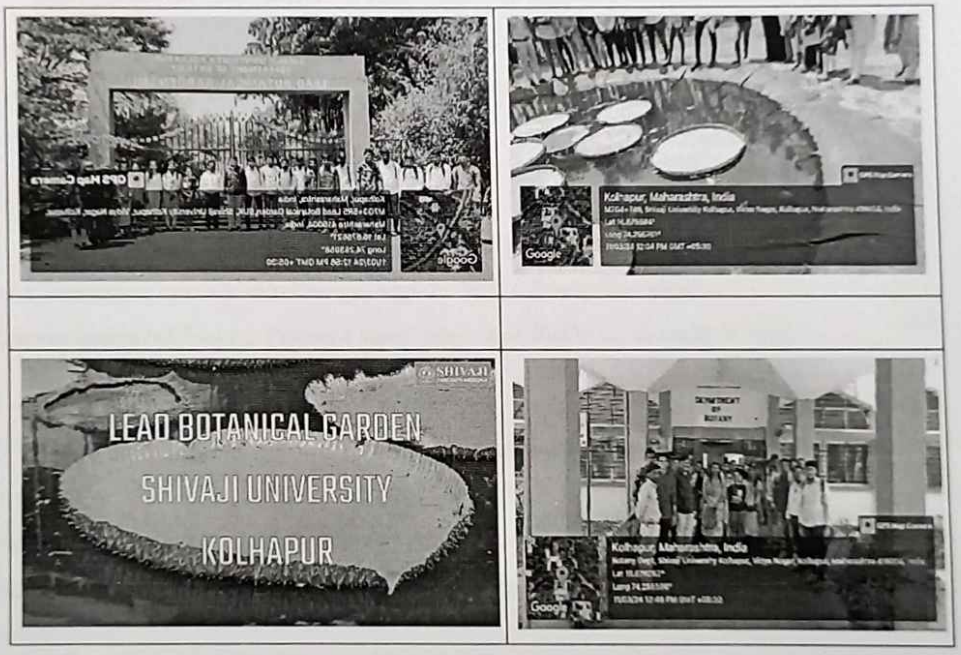
The old botanical garden is situated far from the department in a sloppy terrain, with good well drained lateritic soil which is an ideal place for growth of native plant species. About 100 tree species and some shrubs, woody climbers were planted in this garden. In addition, many medicinal trees, palms and some shrubs were planted in June 2010 - 2011.

In addition, University has given 30 acres of land for extension of Lead Botanic Garden near to Old botanical garden where a well (30 ft. diameter) is constructed as a perennial water source for whole garden. A wetland of an area about 4 acres is developed. More than 1000 individuals of about 100 species of many endemic, medicinal trees, shrubs, bamboos and palms were planted in June 2011.

The New Botanical Garden (Lead Botanic Garden) adjacent to the department was systematically developed in about 6 acres of land by generous financial assistance from

various funding agencies such as DBT, DST and MoEF in the form of projects. The garden is well equipped with facilities like poly houses, glass house, shade houses, mist chamber, water tanks, irrigation, fencing and power tiller. *The garden is divided in various sectors such as:*

Pinetum, Fernery, Conservatory of Rhizomatous, Cormatous, Tuberous and Bulbous plants of Western Ghats, Palmatum, Orchidarium, Nursery of Mangroves, Nursery of RET and endemic plants, Arboretum, Interpretation Centre / Nilambari Multipurpose Hall



I. Pinetum

The Pinetum is situated in front of the department. There is a petrified fossil of *Mesembryoxylon mahabalai* (2 myr.) a member of Podocarpaceae at the centre of the pinetum which is a point of attraction for visitors. The Pinetum has about 25 species of gymnosperms. Some notable species in *pinetum are Agathis alba* (Lam.) Foxw., *Cycas circinalis* L., *Ginkgo biloba* L. and *Podocarpus wallichianum* C. Presl.

II. Fernery

Fernery of the department is established in 2007 with financial support from MoEF. The fernery holds germplasm collection of 59 species of endemic and medicinal ferns. Some important species are *Angiopteris evecta* (G. Forst.) Hoffm., *Equisetum ramosissimum* Desf., *Psilotum nudum* (L.) P. Beauv and *Tectaria fernandensis* (Baker) C. Chr.

III. Conservatory of rhizomatous, cormatous, tuberous and bulbous plants of Western Ghats

This germplasm conservatory is rich with more than 40 species of rhizomatous, tuberous, cormatous and bulbous plants of Western Ghats. Some important collections are species of *Amorphophallus, Arisaema, Chlorophytum, Crinum* and *Dipcadi* .

IV. Palmatum

The palmatum holds more than 55 species of indigenous as well as cultivated palms. Some interesting species are *Arenga wightii* Griff., *Bentinckia nicobarica* (Kurz) Becc., *Corypha umbraculifera* L., *Pinanga manii* Becc. and *Wallichia densiflora* Mart.

V. Orchidarium

There are about 88 species of orchids maintained in their natural habitats. Many terrestrial orchids such as *Eulophia nicobarica* N.P. Balakr. & N.G. Nair, *Habenaria longicorniculata* J. Graham, *Habenaria panchaganiensis* Santapau & Kapadia as well as epiphytic orchids likes *Liparis nervosa* Lindl., *Spathoglottis plicata* Blume and *Thunia venosa* Rolfe.

VI. Mangrove nursery

The department is supported by UGC – SAP under which a nursery of mangroves is constructed. The seedlings are raised, maintained and reintroduced in their natural habitat. e.g. *Heritiera littoralis* Aiton .

VII. Nursery of RET and endemic plants

Lead Botanic Garden has established two nurseries where more than 10,000 seedlings of about 239 species are established. The activities are mainly targeted at raising of indigenous, RET and endemic species. Some important species are *Canarium strictum* Roxb., *Dysoxylum gotadhora* (Buch.-Ham.) Mabb., *Hopea ponga* (Dennst.)Mabb., *Knema attenuata* Warb., *Manilkara littoralis* (Kurz.)Dubard, *Myristica dactyloides* Gaertn.,

Polyalthia fragrans (Dalzell) Benth. & Hook. f., *Sageraea laurifolia* (Graham) Blatt., *Syzygium laetum* (Buch.-Ham.) Gandhi and *Vateria indica* L.

VIII. Arboretum

The arboretum mainly contains medicinal trees. It includes about 100 tree species which were systematically planted in the arboretum such as *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Bedd., *Dolichandrone falcate* (Wall. ex DC.) Seem. , *Madhuca longifolia* var. *latifolia* (Roxb.)A. Chev., *Vateria indica* L.

IX. Interpretation centre or Nilambari Multipurpose hall

The conservation strategies are not practically possible unless the society or public is virtually involved in it. For this purpose lead garden organizes various awareness programmes for people in various strata in this interpretation centre

Conclusion

The Lead Botanical Garden of SUK has played vital role in conservation of plant resources of Western Ghats as well as it has educational, scientific and religious significance. The spread of knowledge about native plants and public awareness are important for better understanding of nature. Western Ghats is one of the hottest hot spots with rich diversity. It is our responsibility to conserve the wealthy gene pool in Western Ghats for sustainable utilization. The lead botanical gardens in India can play major role in conservation of RET species.