

**Proposal**  
**For**  
**Declaration of Himayat Bagh Garden Area, Aurangabad**  
**as a Biodiversity Heritage Site**



***Submitted to***  
**Biodiversity Management Committee, Aurangabad**  
Municipal Corporation, Aurangabad  
and  
**The Maharashtra State Biodiversity Board**  
Seminary Hills, Nagpur, Maharashtra 440001

***Submitted by***  
**Registrar**  
**Vasant Rao Naik Marathwada Krishi Vidyapeeth**  
**Parbhani, Maharashtra**

And



**Umbrella Welfare Foundation (NGO)**  
Aurangabad.

## **Summary**

The nationally important Himayat Bagh Garden Area is hosting very old trees with diversified flora and fauna nearly 165 tree species of wild plants, 48 species of medicinal plants, one each is endangered, and moderately threatened are rare plant species.

This floral and faunal-rich biodiversity of life forms needs to be conserved. The site has also great potential to provide ecological services to the public by enhancing and recharging groundwater and providing clean air.

The unique agricultural research carried out on this campus during the 17<sup>th</sup> century has been a baseline for the progressive improvement of state horticulture and the prosperity of farmers.

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**Format for Proposal for Declaration of Himayat Bagh Garden Area Garden Area, Aurangabad as a Biological Heritage Site under Biological Diversity Act, 2002.**

<b>1.</b>	<b>Identification of the Property</b>	
State	Maharashtra	
Name of the Property	Himayat Bagh Garden Area Garden Area and VNMKV Fruit Research Centre Aurangabad.	
Exact Location	19°53'50" N 75°19'57" E	
Maps/plans showing the boundary of the area proposed	Enclosed	
The total area under the Himayat Bagh Garden Area	310 acres	
Area of site proposed for declaration	310 acres	
<b>2.</b>	<b>Justification for Declaration</b>	
What is the significance of the proposed site?	The area is rich in floral and faunal diversity for 400 years.	

Why the Declaration is proposed give justification	It is proposed to conserve the rich biodiversity of life forms the site supports. Besides the site has the potential to provide ecological services to the public like recharging groundwater, providing clean air, etc. owing to the large vegetation density and natural and cultivated biodiversity it has.
Threats, if any (give details)	Illegal entry, encroachment, and movement of people from surrounding localities, Pilferage of produce and Woodcutting
<b>3.</b>	<b>Description</b>
Present Status of Conservation	Not Protected
<b>4.</b>	<b>Management</b>
Ownership	Owned by Vasantnao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani, (Fruit Research Centre -Himayat Bagh Garden Area) Aurangabad.

<b>Legal Status</b>	
Agency to manage the site after declaration	Biodiversity Management Committee and (VNMKV)
Name, Designation, and Address of responsible person for contact	The Registrar, Vasantnao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani, and Officer in charge of Fruit Research Center.

Sources of Expertise	The scientific staff of the University working at the Centre have expertise in Agriculture, Horticulture, Botany, Microbiology, Entomology, Plant Pathology, Soil Science, Economics, etc., and Umbrella Welfare Foundation and Research Analyst of Umbrella Welfare Foundation (NGO).
<b>5.</b>	<b>Factors affecting the Site</b>
Pressures on the site (Encroachment, Agriculture, etc.)	The campus at Himayat Bagh Garden Area is a green area in Aurangabad and thus may suffer from developmental or encroachment activities in the surrounding areas.
Environmental Pressures	Increased vehicular emission, air and noise pollution from surrounding areas
Visitor Tourism Pressures	The area is mostly used by the nearby slum area from surrounding localities
<b>6.</b>	<b>Documentation</b>
Photographs	Enclosed
<b>Existing site management plans, if any</b>	
<b>7.</b>	Opinion of other concerned stakeholders
	Cropping plan, recommendations of the Biodiversity Management Committee, VNMKV, Parbhani.
<b>8.</b>	Details of disputes if any on the site (give details)
	None
<b>9.</b>	General Remarks, if any
	None

The Fruit Research Centre at Himayat Bagh Garden Area is established in 1937. Horticulture research is initiated in 1941 where research on Fruits and Vegetables along with the Indian Council of Agricultural Research was later handed over to the Government of Maharashtra in 1956 and after that center was attached to Vasantnao Naik Marathwada Agriculture University.

At present, this area is an important green lung space that abounds in very old trees that are more than 100 years old and thus have a particular heritage value.

**Place:** Aurangabad

**Date:** 28 /03 /2022

**Officer in Charge  
Fruit research Centre,  
Himayatbagh Garden area,  
Vasantnao Naik Marathwada Krishi Vidyapeeth  
Parbhani.**

**Recommended by**

<b>Registrar, Vasantnao Naik Marathwada Krishi Vidyapeeth Parbhani, Dist.Prabhani</b>	<b>Director of Research, Vasantnao Naik Marathwada Krishi Vidyapeeth Parbhani</b>
<b>Chairman, Biodiversity Management Committee, Aurangabad Municipal Corporation. Aurangabad</b>	<b>Hon'ble Vice Chancellor, Vasantnao Naik Marathwada Krishi Vidyapeeth Parbhani. Dist Parbhani</b>

## **2. Criteria fulfilled for Biodiversity Heritage Site**

The Vasantrya Naik Marathwada Krishi Vidyapeeth, Parbhani seeks to have the Himayat Bagh garden area at Aurangabad, Maharashtra declared as a Biodiversity Heritage Site, as it fulfils the following criteria Under Section 37 of the Biodiversity Act 2002:

### **A. Areas of biodiversity importance that contain a mosaic of natural, seminatural & human-made habitats which together contain a unique diversity of life forms**

The Himayat Bagh of Aurangabad is among the important campuses addressing nationally important research over an area of 300 acres., hosts a large number of very old trees (that are more than 400 years old). The Himayat Bagh was established by Malik amber in the 17<sup>th</sup> century. As the center for Fruit Research studies for the development of scientific research. In addition, the campus has several fields for its research activities. This mixture of natural, plantations, and horticultural areas support a significant amount of both **natural and cultivated biodiversity** within the campus.

### **B. Areas of biodiversity importance that contain significant domesticated biodiversity and representative agrobiodiversity and agroecosystems**

1. The campus has programs involved in *in-situ* evaluation & conservation of a total of 564 germplasms of 42 crops which includes 8550 trees divided into three sections mainly A, B & C in the Himayat Bagh area.
2. There are several crop types developed through fruit trees programmers within the gardens. Different varieties of crops have been developed by Himayat Bagh over the years. Thus, the sensitive genetic



material in possession at this Himayat Bagh broadly falls into three categories.

- a) The germplasm collection of several crop plants each of which represents the Genetic diversity of respective crops in the country,
- b) New Genetic diversity created in each crop from this basic material through conventional breeding for desirable characteristics such as this is Resistance, quality, and higher yields, and
- c) New fruit varieties developed through traditional and modern research tools.

The plantation at Himayat Bagh supports microorganisms & insects which help in improve crop productivity both directly & indirectly. It is needless to emphasize that all these forms the 'biological wealth' that needs to be provided the needed environment & highest levels of security. The centre has been in touch with National regulatory bodies such as the National Bureau of Plant Genetic Resources (NBPGR), New Delhi, and Indo-Israel 2014-2022 for Mango species development, which has strict guidelines on providing security both for accessions & testing.

This is to ensure that the valuable biological material does not escape 'secure' conditions. In other words, all biological material needs to be offered unpolluted conditions, a clean environment, and utmost security, and hence they must be brought under a highly regimented protection

**A. Areas of biodiversity importance that offer refuge or corridors for threatened and endemic fauna and flora, such as community conserved areas or urban Greens and wetlands**

Nearly 130 wild plant species have been recorded at Himayat Bagh, comprising several rare plants. Of these species are medicinal plants one of the critically endangered and moderately threatened rare plant species. Himayat Bagh has a very high density of Tamarind (*Tamarindus indica*) plant, and the conditions are ideal for their natural regeneration.

## 2. Annexure- I: Historical perspective of Himayat Bagh Garden Area

**Himayat Bagh Garden Area** is a 17th-century garden that now houses the Fruit Research Station and Nursery, which is a part of the Vasantrya Naik Marathwada Krishi Vidyapeeth, Parbhani (Maharashtra). It is located near Delhi Gate in the Rauza Bagh area of Aurangabad. It is a sprawling complex spread over 310 acres, naturally green, and in the olden days, it was known as the Mughal Garden.

Himayat Bagh Garden Area is a very old and historic garden that was formerly the private garden of H.E.H. Nizam in Hyderabad. H.E.H. Nizam used to live in Kile Ark when he was coming to Aurangabad. Adjacent to the Kile Ark is Himayat Bagh Garden Area. In this garden, they have built big things like barrage and baradari on both sides. There is an octagonal basement in the centre of both the tanks and water was circulated through their walls. So, it was helping to keep the indoor atmosphere cool in summer rather than the outdoor environment. Himayat Bagh Garden Area was neglected before it was transferred to Vasantrya Naik Marathwada Agricultural University. But fruits like Mango, Guava, Tamarind, Indian Jujube, Wood Apple, Black

Plum, etc. were collected here. The centre has provided various fruit tree species, e.g., Niranjana (Mango), Establishment No.263 (Tamarind), Ajanta (Tamarind-Sweet sour fruit), Ellora (Wood Apple), Mukta (Indian Jujube), Dinkar (Fig), Tadpimpalgaon-7 (Custard Apple), Devgiri, Vasundhara, Yashashree (Tomato), Anuradha (Eggplant) have also developed and recommended various medicines for control of various diseases and pests on fruit trees.

### a) History of Botany at Himayat Bagh Garden Area

Himayat Bagh Garden Area is a mesmerizing 310-acre garden built in the 17th century during the reign of the Mughal Emperor Aurangzeb. **b) Fruit Trees:      Developed**

#### **Species**

Mango:                In 1985 Niranjana variety was propagated.

Tamarind:            After researching three varieties in Tamarind, the Establishment of 1985 No. 263 (1987) and Ajanta Sweet Tamarind (2006) were

Disseminated, and their clones have been disseminated to farmers for commercial production.

Wood Apple: In 1986, a species called Ellora was propagated.

Indian Jujube: In 1992, a species called Mukta was propagated.

Fig: In 1988, a fig variety called Dinkar was introduced.

Biba: In 2000, Selection 3 and 4 were broadcast.

Custard Apple: In 2000, a variety of custard apple named

Tadpimpalgaon-7 was introduced. **Vegetables:**

### **Developed Species**

Tomato: Successfully developed ATV-1, ATV-2 (Dev giri), Hybrid-28 (Vasundhara), Selection- 14 (Yashashree).

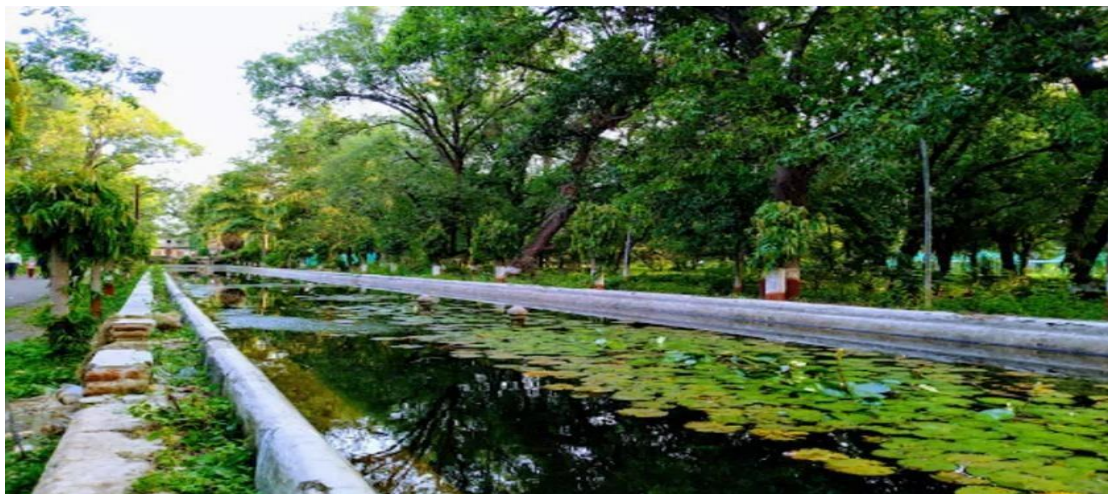
Eggplant: ABV-1 and ABV-10 (Anuradha) were transmitted.

Also, from time-to-time research recommendations on the cultivation of various fruit trees and increase in yield proved to be very useful to the farmers.





**Plate- 1: Conservatory at Himayat Bagh**



**Plate- 2: A view of Himayat Bagh**

At the time of the Malik amber era and afterward there were Approx 3000 trees of Mango Species at Himayat Bagh Garden area region. In which some species got local names given by localities and as per the quality, taste & shape of the mango. Some of them are Nakadya, Maruti, Dudhpedha,

Emaratti, Gulab khas, Goti etc. But now the yield of Kesar species is

predominant at the Himayat Bagh Garden area. Himayat Bagh Garden area region is only of its kind in Marathwada. One of the historic gardens & historical city of Aurangabad.

The Himayat Bagh Garden area has a very high density of Tamarind (*Tamarindus indica*) plants, and the conditions are ideal for their natural regeneration. Due to efforts of Fruit Research Institute, selection of Tamarind plant varieties was carried out & from which the varieties which showed good physical, chemical & higher yield characters were selected & new crops were developed. No. 263 & Pratishtan are dominant varieties at Himayat Bagh. Himayat Bagh Garden area is one of the places protected under the Archaeological Act. Himayat Bagh Garden Area and Salim Ali Lake have mutual benefit of each other in terms of Birds nesting, Breeding, etc.

Some Rare Medicinal Plants like Kanchan, Shewari, Khair, Adulsa are present at Himayat Bagh Garden area. Medicinal plants can be defined as the plants that possess therapeutic properties or exert beneficial pharmacological effect on the human or animal body. Himayat Bagh Garden Area is best example of Horticulture during Nizam and Mughal Era.

The horticulture research in the Himayat Bagh Garden area had been in progress since the Fruit Research Institute were started projects. New disease resistant, high yielding, good quality crops were developed, and research is still going on in the Agricultural sector. Some 100-150 years old plants were also there & which are the asset of Himayat Bagh Garden area region & the need of protection & conservation is high for wide varieties of crops.

#### **b) Description of Himayat Bagh**

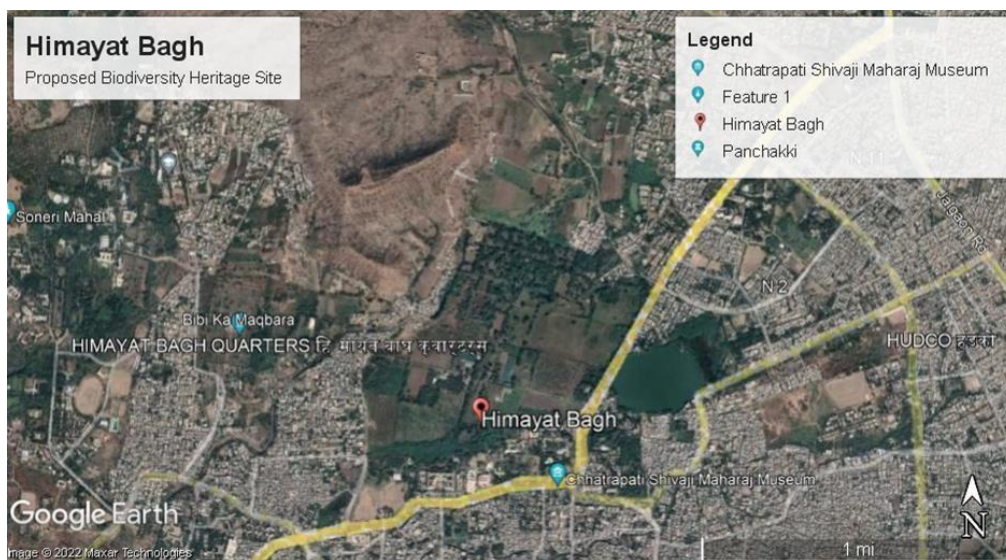
The Himayat Bagh is located near Delhi Gate in Rauza Bagh area of Aurangabad. It is a sprawling complex spread over 300 acres (1.2 km<sup>2</sup>), naturally green and in the olden days it was known as the Mughal Garden. Himayat Bagh is a 17th century garden that now houses the Fruit Research Station and Nursery,

which is a part of the Vasantrya Naik Marathwada Krishi Vidyapeeth, Parbhani (Maharashtra).

The garden has been divided into several blocks and inhabiting a mixture of both natural vegetation and a large collection of horticultural crops.

In Aurangzeb's time, Khizri Talao extended the whole length of the northern wall, (extending from present day Salim Ali Lake till Begumpura / Makbara) but the exhalation and dampness proved unhealthy, and Aurangzeb ordered the portion immediately in front of his palace (Kila-e-Ark) to be filled in and converted into fields. This reclaimed portion was later developed into Mughal Garden, (now known as Himayat Bagh) by one of the officials of Aurangzeb's court, with many fruit-bearing trees of different varieties for the royal court and its officials.

Himayat Bagh also houses the Barra Darri which was erected by Ivaz Khan. A covered aqueduct passes over one of the buildings and in the olden day's water descended in a shower into an oblong cistern below containing several fountains. A marvelous feat of engineering that involved an underground water chamber; it created a natural air-conditioning that cooled the entire area when in operation. It is now inoperative, but the system still exists and is worth a study. Barra Darri now protected under Archaeological Act.



**Fig 1: Map showing the location of Himayat Bagh, Aurangabad, Maharashtra**

**Geographical Area:**

**Aurangabad is the main headquarter of Marathwada region and situated in the heart of the state of Maharashtra and Approximately 400 kms From east side of Mumbai.**

**Latitude 19 degree north**

**Longitude 75 degree east**

**Elevation about sea level 588 m**

**This city has a rail and air connectivity with main cities like Mumbai & Delhi Himayat Bagh is situated about 8 km from Aurangabad railway station and around 10 km from Aurangabad Airport.**

**Land and weather:**

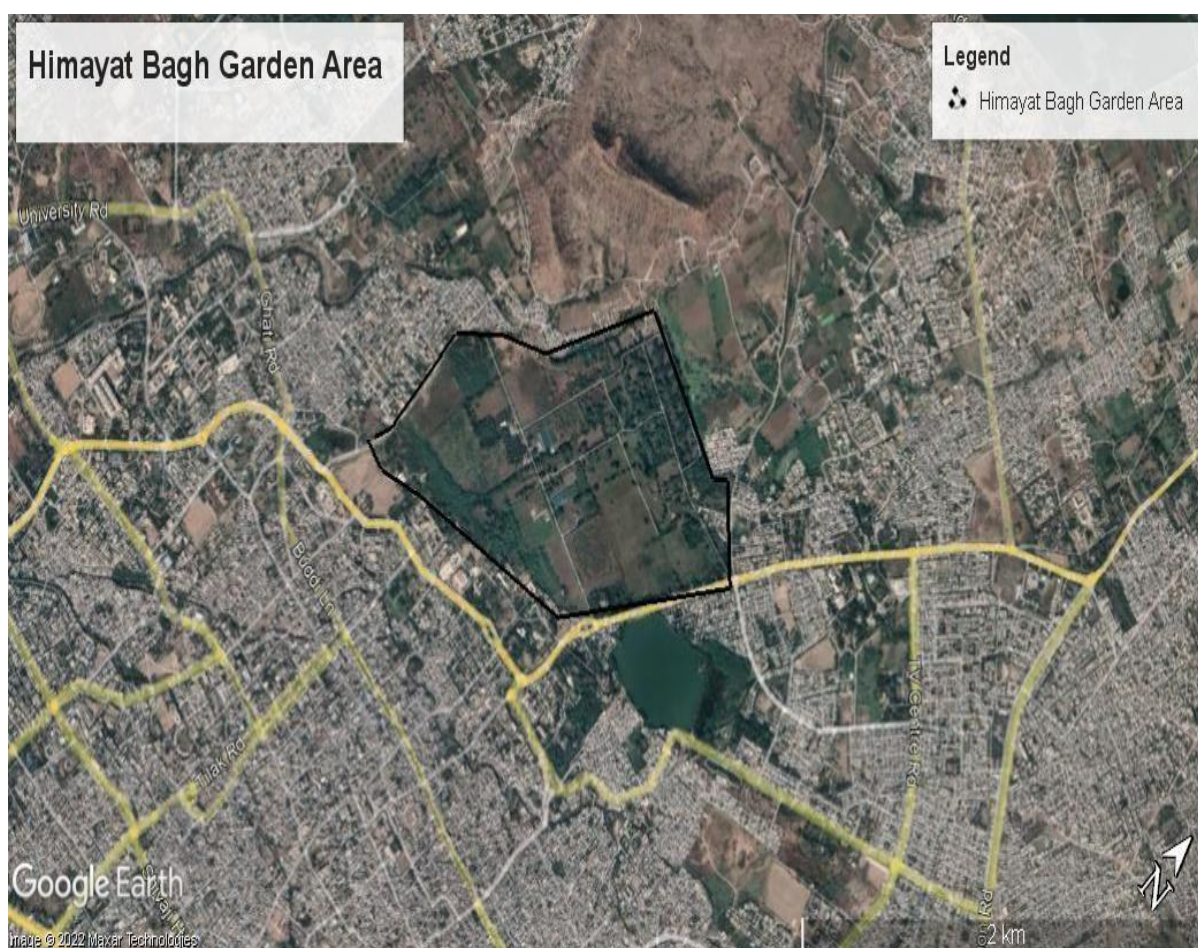
**The average annual rainfall in Aurangabad city is about 700 mm The minimum temperature recorded is 9 degrees Celsius and maximum is 41.5 degree centigrade. Overall weather is dry, warm, and pleasant. The soil quality of Himayat Bagh Garden area is moderately good. The Salim Ali Lake is located near the Delhi Gate near Himayat Bagh. It is a major green location in the city limits. There are about 43 wells in Himayat Bagh Garden area and out of which 6 to 7 wells are active. The Himayat Bagh Garden area has an irrigation system and hydraulic canals. Even today, two of its canals that are arranged on each side. This arrangement made it possible to pass water. One was needed to irrigate all the plants in the Himayat Bagh Garden area, so the Shakkar Bawdi has been made there. The tank usually gets filled up during the rainy season. During the summer, this water was used for irrigation. Shakkar means a reservoir of fresh water.**

**Work & Purpose:**

- To study the different methods of planting fruit plants.**
- To evaluate, collect and conserve different species of Sweet lime, Guava, Fig, Mud apples etc.**
- To identify and select high quality varieties of Java plum, Mango, Custard apple, Tamarind etc.**

- To conserve and collect unirrigated fruit plant varieties.
- To study different Modern Cultivation Methods for fruit plants. Specially Mango, Tamarind, Guava and Custard apple.
- To study mitigation measures for diseases and insect infestation of various fruit plants.
- To rejuvenate Mango and Sweet lime gardens.
- Supply of cuttings and seedlings of fruit crops and ornamental plants
- Recommendation of various medicines for control of fruit diseases and pests.

### Map of Himayat Bagh



**Figure 2: Map showing details of the area & boundary (in black) of Himayat Bagh, Aurangabad, Maharashtra.**



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## Milestones of Research Station in Growth and Development of Horticulture

Year	Activities
17 <sup>th</sup> Century	Established during the Mughal rule in India.
	Himayat Bagh Garden Area also houses the Barra Darri which was erected by Ivaz Khan.
1937	A 36- acre Fruit Research Center was set up in the former state of Hyderabad for the purpose of vegetable cultivation.
1941	With the help of Indian Council of Agricultural Research, started research on different fruit trees.
1956	After the state restructuring, the plan of the Fruit Research Centre came to the Government of Maharashtra.
1969	After that Punjabrao Agricultural University, Akola
1972	After that, the center was attached to Vasant Rao Naik Marathwada Agricultural University, Parbhani.
1974	Old Fruit Research Center and Vasant Rao Naik Marathwada Agricultural University donated Rs. 1 lakh to Aurangabad Municipality for public gardening. In return, 40.5 acres of Himayat Bagh Garden Area was acquired on 20/10/1974.
1975-76	The area of the present Fruit Research Centre is 116.64 hectares by acquiring the lands of the farmers around Himayat Bagh Garden Area.

### Flower and vegetable crops demonstrated

Year	Crop	Varieties
2003-04	Gerbera	Binca, Carnival, TLD, Daine, King Alexander, Lidy lifferring
	Dutch Rose	Passion, Sublime, Massai, Spinx, Flint-strone
2005-06	Carnation	Domingo, Master, Schubert, Jawa, Baltico, Dover, Gaudina, Kiro, Varna, Solar
	Gerbera	Savvanh, Zingaro, Dana elen, Rosalin, Lamborghani, Cariba, Dacota, Gucci, Andes, Fusion
	Color Capsicum	Bombay, Orbello
2008-09	Dutch Rose	Passion
	Dutch Rose	Tropical, Gold strike, Iceberg, Noblese
	Dutch Rose	Bordex
	Dutch Rose	Bordex, Bhugati, Amarose

	Dutch Rose	Gold-strike, Iceberg, Mery clear, Circus, Avalanch
2010-11	Gerbera	Savannah, Salvador, Rosalin, Cacharelle, Silvester, Dune
	Dutch Rose	Top secret, Naranga, Poision, Gold strike
	Capsicum	US-181
2011-12	Gerbera	Savannah, Salvador, Rosalin, Cacharelle, Silvester, Dune
	Dutch Rose	Top secrete, Naranga, Poision
2012-13	Cherry Tomato, Cucumber, Capsicum	Extra Sweet, Swati, Snow White WS-54
	Chrysanthemum	Pandhari Rewadi
	Tube Rose	Local
2013-14	Exotic Vegetable, Mery gold	Span Yellow, Orange
	Gladiolus	White Prosperity, Mix color
	Tube Rose	Local



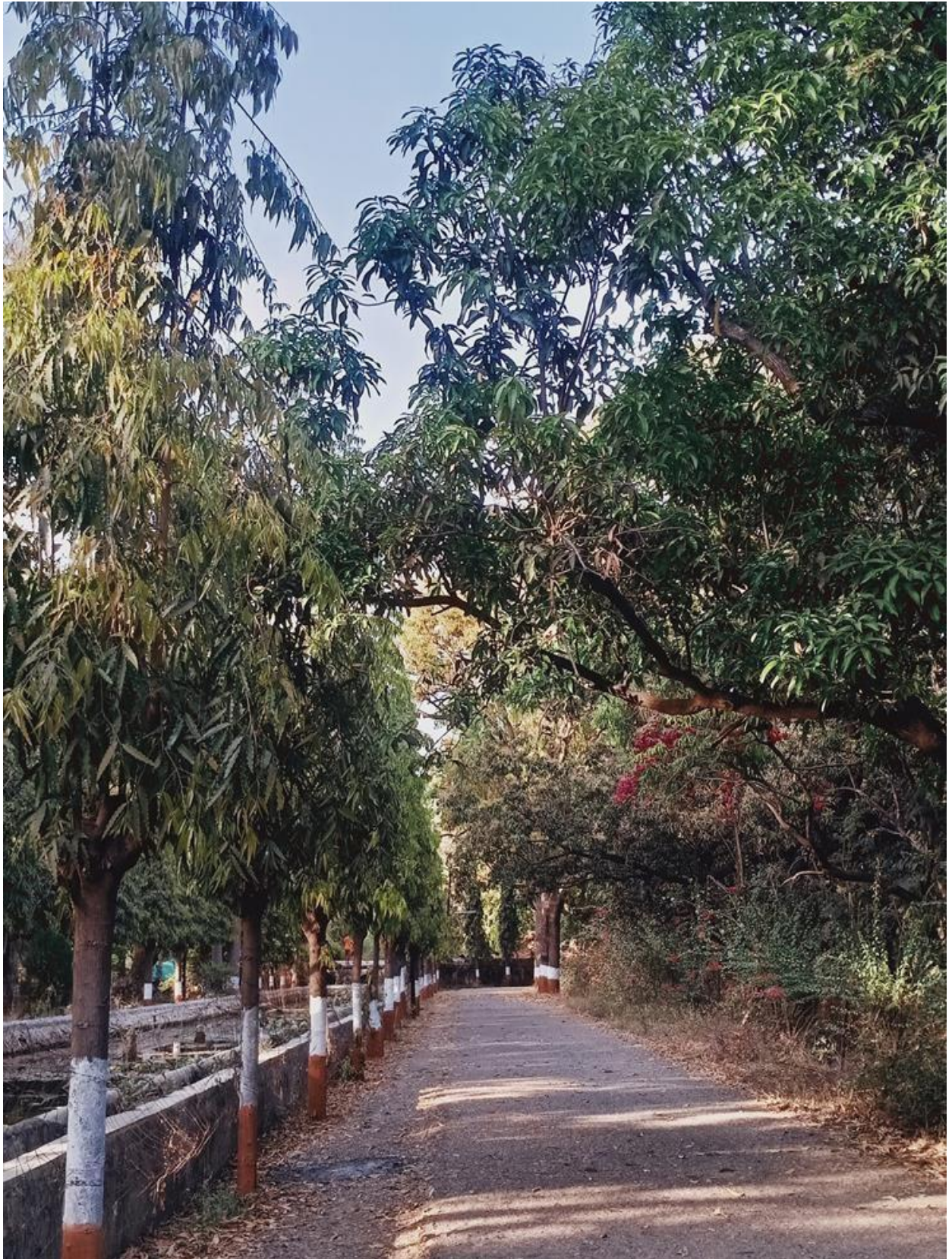
**Plate- 3: More than 100 years old Tamarind Tree at Himayat Bagh**



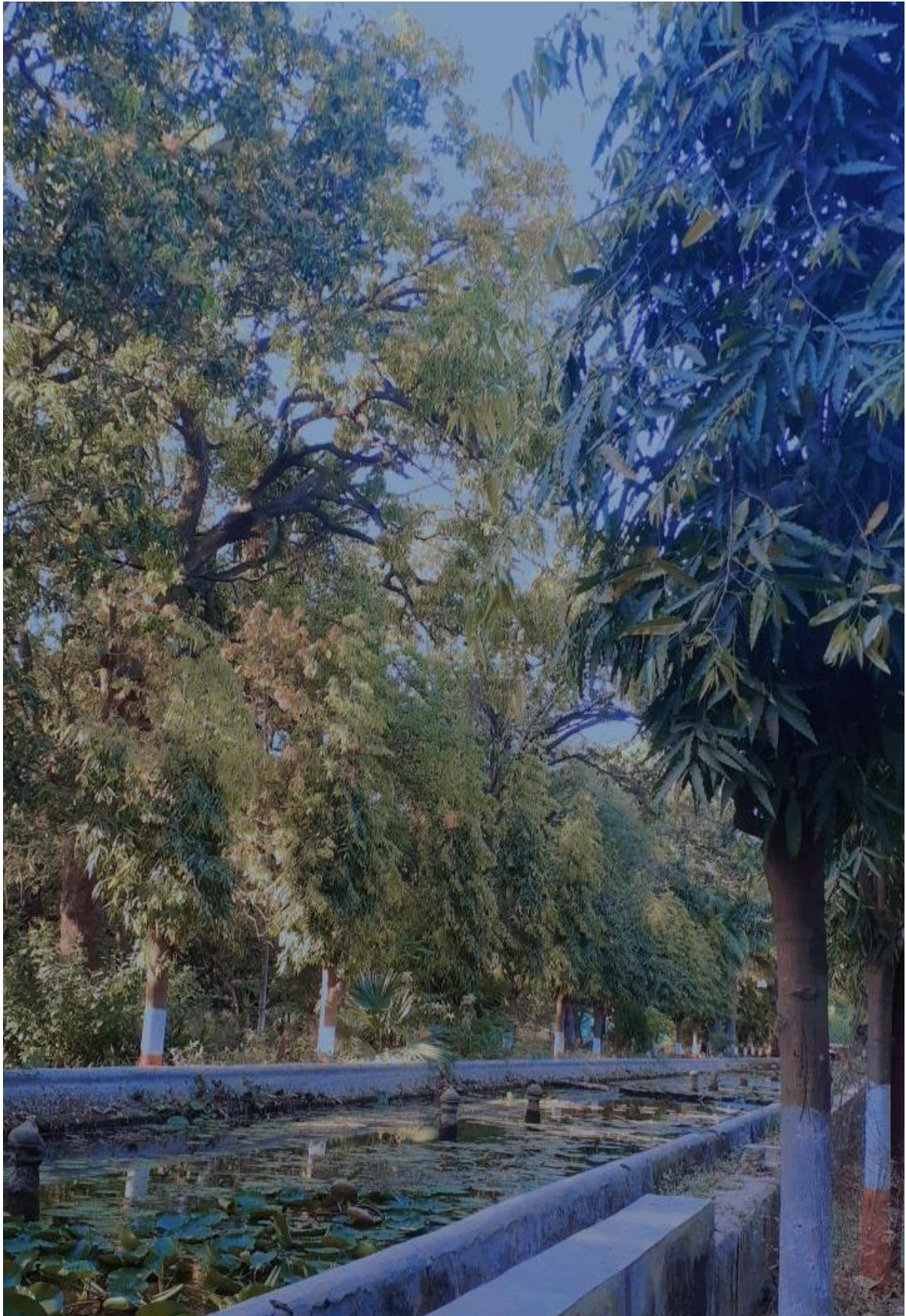
**Plate- 4: Mango tree presumed to be planted by Malik Ambar**



**Plate- 5: A view of the Heritage Tree Block at Himayat Bagh**



**Plate- 6: A view of Vegetation at Himayat Bagh**



**Plate- 7: A view of vegetation near water lilies at Himayat Bagh**



**Plate- 8: A view of the Tamarind orchard at Himayat Bagh**



**Plate- 9: A view of Mango orchard at Himayat Bagh**



**Plate- 10: Research Analyst while collecting data**



**Plate- 11: Research Analyst during project work**



**Flora & Fauna of Himayat Bagh, Aurangabad, Maharashtra**  
**Annexure – II: List of Wild Plants recorded at Himayat Bagh**

Sr. No.	Order	Family Name	Common Name	Botanical Name	Habit	Status
1.	Alismatales	Hydrocharitaceae	Hydrilla	Hydrilla verticillaata	Perennial	
2.	Apiales	Apiaceae	Kateshewar	Centella asiatica	Perennial	
3.	Arecales	Arecaceae	Shindad	Phoenix sylvestris Roxb.	Tree	
4.	Arecales	Arecaceae	Fishtail palm	Caryota urens L.	Tree	
5.	Arecales	Arecaceae	Bottle palm	Roystenea regia O.F.Cook	Palm tree	
6.	Arecales	Palmae	Winepalm	Borassus flabellifer L.	Palm tree	
7.	Asparagales	Asparagaceae	Tuberose	Polianthes tuberosa L.	Bulb	
8.	Asparagales	Amaryllidaceae	Spider lily	Hymenocallis littoralis	Bulb	
9.	Asparagales	Amaryllidaceae	Woodrow's Crinum Lily	Crinum woodrowii Baker	Bulb	
10.	Asparagales	Amaryllidaceae	Unknown	Unidentified bulbs	Bulb	Critically Endangered
11.	Asparagales	Irideaceae	Gladiolus	Gladiolus Spp	Bulb	
12.	Asterales	Asteraceae	Bandar	Vernonia divergens	Shrub	Medicinal Plant
13.	Asterales	Asteraceae	Christmas Bush	Chromolaena odorata	Herb	
14.	Asterales	Asteraceae	Ekdandi	Tridax procumbens	Seasonal	
15.	Asterales	Asteraceae	Parthenium	Parthenium hysterophorus	Seasonal	
16.	Asterales	Asteraceae	Makka	Emilia sonchifolia	Seasonal	

17.	Asterales	Asteraceae	Goghru/ Landga	Acanthospermum hispidum	Seasonal	
18.	Boraginales	Boraginaceae	Bhokhar	Cordia dichotoma	Tree	
19.	Boraginales	Boraginaceae	Indian Cherry	Cordia dichotoma	Tree	Medicinal Plant

20.	Caryophyllales	Amaranthaceae	Math	Amaranthus spinosus	Seasonal	
21.	Caryophyllales	Amaranthaceae	Amaranthus	Amaranth	Seasonal	
22.	Caryophyllales	Amaranthaceae	Kombda/ Cockstail	Celosia argentea	Seasonal	
23.	Caryophyllales	Amaranthaceae	Aghada	Achyranthes aspera	Seasonal	
24.	Caryophyllales	Cactaceae	Cactus	Opuntia basilaris	Perennial	
25.	Caryophyllales	Chenopodiaceae	Batawa	Chenopodium album	Seasonal	
26.	Caryophyllales	Nyctaginaceae	Bogainvillea	Bougainvillea spectabilis	Climbers	
27.	Caryophyllales	Polygonaceae	Coral vine	Antigonon leptopus	Climbers	
28.	Caryophyllales	Portulacaceae	Ghol	Portulaca oleracea	Seasonal	
29.	Commelinales	Pontederiaceae	Water hycianth	Eichhornia crassipes	Perennial	
30.	Cyperales	Cyperaceae	Lavala	Cyperus rotundus	Perennial	
31.	Ericales	Ebenaceae	Persimon	Diospyros peregrina	Tree	Medicinal Plant
32.	Ericales	Ebenaceae	Temburni	Diospyrus malabarica	Tree	Medicinal Plant
33.	Ericales	Lecythidaceae	Kailaspati,	Couroupita guianesis		
34.	Ericales	Sapotaceae	Mahua	Maduca longifolia	Tree	Medicinal Plant
35.	Ericales	Sapotaceae	Khirani	Manilkara hexandra	Tree	
36.	Fabales	Caesalpinaceae	Yellow Flametree	Peltophorum pterocarpum	Tree	

37.	Fabales	Caesalpinaceae	Phanera vahlii	Bauhinia vahlii	Climber	
38.	Fabales	Caesalpinaceae	Tamarind	Tamarindus indica	Tree	Medicinal Plant
39.	Fabales	Caesalpinaceae	Flame Tree	Delonix regia	Tree	
40.	Fabales	Caesalpinaceae	Cassia	Cassia spectabilis	Tree	
41.	Fabales	Caesalpinaceae	Grey Nicker	Caesalpinia bonduc	Shrub	Medicinal Plant
42.	Fabales	Caesalpinaceae	Gajaga	Caesalpinia bonduc	Tree	Medicinal Plant
43.	Fabales	Fabaceae	Rain Tree	Albizia saman	Tree	
44.	Fabales	Fabaceae	Kanchan	Bauhinia purpurea	Tree	Medicinal Plant
45.	Fabales	Fabaceae	Gulmohar	Delonix regia	Tree	
46.	Fabales	Fabaceae	Subabul	Leucaena leucocephala	Tree	

47.	Fabales	Fabaceae	Hiwar	Acacia chundra	Tree	Moderately threatened
48.	Fabales	Fabaceae	Karanj	Pongamia pinnata	Tree	Biodiesel plant
49.	Fabales	Fabaceae	Kanchan	Bauhinia purpurea	Tree	
50.	Fabales	Fabaceae	Apta	Bauhinia racemosa	Tree	Medicinal Plant
51.	Fabales	Fabaceae	Chambhul	Couroupita guinensis	Climber	
52.	Fabales	Fabaceae	Shewari	Sesbania sesban	Tree	Medicinal Plant
53.	Fabales	Fabaceae	Saundad	Prosopis cineraria	Tree	
54.	Fabales	Fabaceae	Cassia	Senna surattensis	Tree	
55.	Fabales	Fabaceae	Patangi(Shiras)	Dalbergia melanoxylon	Tree	
56.	Fabales	Fabaceae		Dalbergia paniculate	Tree	
57.	Fabales	Fabaceae	Shisam	Dalbergia sissoo	Tree	Medicinal Plant

58.	Fabales	Fabaceae	Glyricidia	Gliricidia maculate	Tree	
59.	Fabales	Fabaceae	Babool	Acacia nilotica	Perennial	
60.	Fabales	Fabaceae	Prosopis	Prosopis juliflora	Perennial	
61.	Fabales	Fabaceae	Cassia	Senna auriculata	Perennial	
62.	Fabales	Fabaceae	Pongamia	Pongamia pinnata	Perennial	
63.	Fabales	Fabaceae	Gliricidia	Gliricidia sepium	Tree	
64.	Fabales	Fabaceae	Flame of the forest	Butea monosperma.	Tree	
65.	Fabales	Mimosaceae	Khair	Senegalia catechu	Tree	Medicinal Plant
66.	Fabales	Mimosaceae	Pithecellobium dulce Bean	Pithecellobium dulce	Tree	Medicinal Plant
67.	Fabales	Mimosaceae	Woman's tongues tree	Albizia lebbeck	Tree	Medicinal Plant
68.	Fabales	Casurinaceae	Suru	Casuarina equisetifolia	Tree	
69.	Fabales	Fabaceae	Sita Ashok	Saraca asoca	Tree	
70.	Gentianales	Asclepiadaceae	Rui	Calotropis gigantean	Perennial	
71.	Gentianales	Apocynaceae	White chafa	Plumeria alba	Tree	

72.	Gentianales	Apocynaceae	Satwin	Alstonia scholaris	Tree	
73.	Gentianales	Apocynaceae	Indigo Plant	Wrightia tinctoria	Tree	
74.	Gentianales	Apocynaceae	Bitawa/bitti	Cascabela thevetia	Tree	
75.	Gentianales	Apocyanaceae	Tagar	Tabernaemoniana divaricate	Shrub	Medicinal Plant

76.	Gentianales	Apocynaceae	Allamanda	Allamanda cathartica	Climbers	
77.	Gentianales	Apocynaceae	Red chafa	Plumeria alba	Tree	
78.	Gentianales	Apocynaceae	Karonda	Carissa carnadas	Shrub	Medicinal Plant
79.	Gentianales	Apocynaceae	Bitawa/biiti	Cascabela thevetia	Shrub	
80.	Gentianales	Rubiaceae	Jasmine	Ixora arborea	Shrub	
81.	Gentianales	Rubiaceae	Kadamb	Neolamarckia cadamba	Tree	
82.	Lamiales	Bignoniaceae	Fountain tree	Spathodea campanulata	Tree	Ornamental
83.	Lamiales	Bignoniaceae	Buch	Millingtonia horiensis	Tree	Medicinal Plant
84.	Lamiales	Lamiaceae	Sasusage Tree	Kigelia Africana	Tree	
85.	Lamiales	Lamiaceae	Cup and saucer	Holmskioldia sanguinea	Shrub	
86.	Lamiales	Lamiaceae	Clerodendron	Clerodendrum splendens	Climbers	
87.	Lamiales	Oleaceae	Shivan	Gmelina arborea	Tree	Medicinal
88.	Lamiales	Verbenaceae	Jasmine	Jasminum grandiflorum	Climbers	Aromatic Plant
89.	Lamiales	Verbenaceae	Golden Dewdrop	Duranta erecia	Shrub	
90.	Lamiales	Verbenaceae	Variegated duranta	Duranta Erecta Varigata	Shrub	
91.	Lamiales	Verbenaceae	Purple Wreath	Petrea volubilis	Climbers	
92.	Lamiales	Verbenaceae	Tantani	Lantana camara	Shrub	
93.	Lamiales	Verbenaceae	Ghaneri	Lantana camara	Perrenial	
94.	Magnoliales	Annoniaceae	False Ashoka	Polyalthia longifolia	Tree	
95.	Magnoliales	Annoniaceae	Drooping False Ashok	Polyalthia longifolia	Tree	
96.	Magnoliales	Magnoliaceae	Champak	Magnolia champaca	Tree	Aromatic Plant

97.	Magnoliales	Magnoliaceae	Nutmeg	Myristica fragrans	Tree	Medicinal Plant
98.	Malpighiales	Euphorbiaceae	Putranjiva	Putranjiva roxburghii	Tree	Medicinal Plant
99.	Malpighiales	Euphorbiaceae	Black-Honey Shrub	Kirganelia reticulata	Herb	Medicinal Plant
100.	Malpighiales	Euphorbiaceae	Jatropha	Jatropha curcas	Perennial	
101.	Malpighiales	Phyllanthaceae	Rai Awala	Cicca acidus	Tree	
102.	Malpighiales	Phyllanthaceae	Pandharphali	Flueggea leucopyrus	Climber	Medicinal Plant
103.	Malvales	Malvaceae	Katesawar	Bombax ceiba	Tree	Medicinal Plant
104.	Malvales	Malvaceae	Indian Elm	Gauzama ulmifolia	Tree	Medicinal Plant
105.	Malvales	Malvaceae	Flannel weed	Sida cordifolia	Herb	Medicinal Plant
106.	Malvales	Malvaceae	Murud sheng	Helicteres isora	Tree	
107.	Malvales	Malvaceae	Cocoa	Theobroma cacao	Tree	
108.	Malvales	Sterculiaceae	Wild almond tree	Sterculia foetida	Tree	Biodiesel
109.	Myrtales	Combretaceae	Arjun	Terminalia cuneata	Tree	
110.	Myrtales	Combretaceae	Madhumalti	Combretum indicum	Climber	Medicinal Plant
111.	Myrtales	Combretaceae	Combretum	Combretum ovalifolium	Climber	
112.	Myrtales	Combretaceae	Crocodile bark tree	Terminalia tomentosa	Tree	
113.	Myrtales	Myrtaceae	Bottle brush	Callistemon lanceolatus	Tree	
114.	Myrtales	Myrtaceae	Nilgiri	Eucalyptus globulus	Tree	Medicinal Plant
115.	Myrtales	Myrtaceae	Bottle brush	Callistemon citrinus	Tree	
116.	Myrtales	Myrtaceae	All spice	Pimmenta dioica	Tree	Medicinal Plant
117.	Nymphaeales	Nymphaeaceae	Water lily	Nymphaea pubescens	Perennial	

118.	Poales	Poaceae	Bambu	Bambusa tulda	Tree	
119.	Poales	Poaceae	Grass (Jayavant)	Panicum agrostoides	Perennial	
120.	Poales	Poaceae	Deer grass	Muhlenbergia rigens	Seasonal	
121.	Ranunculales	Menispermaceae	Gulvel	Tinospora cordifolia	Climber	Medicinal Plant
122.	Ranunculales	Menispermaceae	Vasantwel	Cocculus hirsutus	Perennial	
123.	Ranunculales	Papaveraceae	Piwala dhotra	Argemone mexicana	Seasonal	
124.	Rosales	Moraceae	Otamb	Artocarpus lakoocha	Tree	
125.	Rosales	Moraceae	Rubber plant	Ficus elastica	Tree	
126.	Rosales	Moraceae	Umber	Ficus racemose	Tree	Medicinal Plant
127.	Rosales	Moraceae	Pimpal	Ficus religiosa	Tree	Medicinal Plant
128.	Rosales	Roseaceae	Gulab	Rosa chinensis	Shrub	
129.	Rosales	Moraceae	Wad	Ficus beghalensis	Tree	Medicinal Plant
130.	Rosales	Moraceae	Paper mulberry	Broussontia papyrifera	Tree	
131.	Rosales	Rhamnaceae	Ber	Zizyphus jujuba	Tree	
132.	Rosales	Moraceae	Ficus Tree	Ficus benjamina	Tree	
133.	Rosales	Moraceae	Umber	Ficus hispida	Tree	Medicinal Plant
134.	Rosales	Cannabaceae	Indian charcoal tree	Trema orientalis	Tree	
135.	Rosales	Rhamnaceae	Wild jujube	Zizyphus oenoplia	Shrub	Medicinal
136.	Rosales	Ulmaceae	Indian Elm	Holoptelea integrifolia	Tree	Medicinal
137.	Rubiales	Rubiaceae	Rukhmini	Ixora chinensis	Shrub	
138.	Salviniales	Salviniaceae	Salvinia	Salvinia adnata	Perennial	
139.	Santalales	Santalaceae	Chandan	Santalum album	Tree	Aromatic
140.	Santalales	Santalaceae	Bandgul	Viscum album	parasite	

141.	Sapindales	Anacardiaceae	Indian Ash Tree	Lannea coromandelica	Tree	Medicinal
142.	Sapindales	Meliaceae	Neem	Azadirachta indica	Tree	Medicinal
143.	Sapindales	Rutaceae	Bael	Aegele marmelos	Tree	
144.	Sapindales	Sapindaceae	Ritha	Sapindus laurifolius	Tree	Medicinal
145.	Solanales	Convolvulaceae	Dodder(Amarvel)	Cuscuta reflexa	parasite	
146.	Solanales	Convolvulaceae	Elephant creeper	Argyreia nervosa	Climber	Medicinal
147.	Solanales	Convolvulaceae	Amarvel	Cuscuta reflexa	Seasonal	
148.	Spindales	Meliaceae	Mahogany	Swietenia macrophylla King	Tree	
149.	Solanales	Solanaceae	Ranpopati	Nicandra physalodes	Seasonal	
150.	Solanales	Solanaceae	Dhatura	Datura innoxia	Seasonal	

**Annexure – III: List of Medicinal Plants recorded at Himayat  
Bagh**

<b>Sr. No.</b>	<b>Order</b>	<b>Family name</b>	<b>Common name</b>	<b>Scientific name</b>	<b>Habit</b>	<b>Status</b>
1.	Ericales	Sapotaceae	Mahua	Maduca longifolia	Tree	Medicinal
2.	Fabales	Caesalpiniaceae	Tamarind	Tamarindus indica	Tree	Medicinal
3.	Fabales	Caesalpiniaceae	Gajaga	Caesalpinia bonduc	Tree	Medicinal
4.	Fabales	Fabaceae	Kanchan	Bauhinia purpurea	Tree	Medicinal
5.	Fabales	Fabaceae	Apta	Bauhinia racemosa	Tree	Medicinal
6.	Fabales	Fabaceae	Shewari	Sesbania sesban	Tree	Medicinal
7.	Fabales	Fabaceae	Shisam	Dalbergia sissoo	Tree	Medicinal
8.	Fabales	Mimosaceae	Khair	Senegalia catechu	Tree	Medicinal



9.	Fabales	Mimosaceae	Pithecclobium dulce Bean	Pithecellobium dulce	Tree	Medicinal
10.	Fabales	Mimosaceae	Woman's tongues tree	Albizia lebbeck	Tree	Medicinal
11.	Gentianales	Apocynaceae	Tagar	Tabernaemontana divaricata	Shrub	Medicinal
12.	Gentianales	Apocynaceae	Karonda	Carissa carnadas	Shrub	Medicinal
13.	Lamiales	Acanthaceae	Adulsa	Justicia adhatoda	Perennial	Medicinal
14.	Lamiales	Bignoniaceae	Fountain tree	Spathodea campanulata	Tree	Medicinal
15.	Lamiales	Bignoniaceae	Buch	Millingtonia hortensis	Tree	Medicinal Plant
16.	Lamiales	Lamiaceae	Shivan	Glmelina arborea	Tree	Medicinal Plant
17.	Malpighiales	Euphorbiaceae	Putranjiva	Putranjiva roxburghii	Tree	Medicinal Plant
18.	Malpighiales	Euphorbiaceae	Black- Honey Shrub	Kirganelia reticulata	Herb	Medicinal Plant
19.	Malpighiales	Phyllanthaceae	Pandharphali	Flueggea leucopyrus	Climber	Medicinal Plant
20.	Malpighiales	Magnoliaceae	Nutmeg	Myristica fragrans	Tree	Medicinal Plant
21.	Malvales	Malvaceae	Katesawar	Bombax ceiba	Tree	Medicinal Plant
22.	Malvales	Malvaceae	Indian Elm	Gauzama ulmifolia	Tree	Medicinal Plant
23.	Malvales	Malvaceae	Flannel weed	Sida cordifolia	Herb	Medicinal Plant
24.	Myrtales	Combretaceae	Madhumalti	Combretum indicum	Climber	Medicinal Plant
25.	Myrtales	Myrtaceae	All Spice	Pimmenta dioica	Tree	Medicinal Plant
26.	Myrtales	Myrtaceae	Nilgiri	Eucalyptus globulus	Tree	Medicinal Plant
27.	Ranunculales	Moraceae	Gulvel	Tinospora cordifolia	Climber	Medicinal Plant
28.	Rosales	Moraceae	Umber	Ficus racemosa	Tree	Medicinal Plant
29.	Rosales	Moraceae	Pimpal	Ficus religiosa	Tree	Medicinal Plant

30.	Rosales	Moraceae	Wad	Ficus benghalensis	Tree	Medicinal Plant
31.	Rosales	Moraceae	Umber	Ficus hispida	Tree	Medicinal Plant
32.	Rosales	Rhamnaceae	Wild jujube	Ziziphus oenoplia	Shrub	Medicinal Plant
33.	Rosales	Ulmaceae	Indiam Elm	Holoptelea integrifolia	Tree	Medicinal Plant
34.	Sapindales	Anacardiaceae	Indian Ash Tree	Lannea coromadelica	Tree	Medicinal Plant
35.	Sapindales	Meliaceae	Neem	Azadirachta indica	Tree	Medicinal Plant
36.	Sapindales	Sapindaceae	Ritha	Sapindus laurifolius	Tree	Medicinal Plant
37.	Solanales	Solanaceae	Ashwagandha	Withania somnifera	Perennial	Medicinal Plant
38.	Solanales	Convolvulaceae	Elephant creeper	Argyreia nervosa	Climber	Medicinal Plant

**Annexure- IV: List of Fungi recorded at Himayat Bagh**

<b>Sr. No.</b>	<b>Order</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
1	Agaricaceae	Agaricales	Mushroom	Lepiota	Mushroom
2	Agaricaceae	Agaricales	Mushroom	Chlorophyllum	Mushroom
3	Agaricaceae	Agaricales	Mushroom	Agaricus	Mushroom
4	Botryosphaeriales	Botryosphaericeae		Lasiodiplodia theobromae	Plant Pathogen
5	Botryosphaeriales	Botryosphaericeae		Botryosphaeria ribis	Plant Pathogen
6	Helotiales	Sclerotiniaceae		Botrytis cineria	Plant Pathogen
7	Botryosphaeriales	Botryosphaericeae		Macrophoma mangiferae	Plant Pathogen
8	Cantharellales	Ceratobasidiaceae		Rhizoctonia solani	Plant Pathogen
9	Cantharellales	Ceratobasidiaceae		Rhizoctonia bataticola	Plant Pathogen
10	Cantharellales	Ceratobasidiaceae		Rhizoctonia solani	Plant Pathogen
11	Capnodiales	Mycosphaerellaceae		Cercospora brassicicola	Plant Pathogen
12	Capnodiales	Mycosphaerellaceae		Mycosphaerella brassicicola	Plant Pathogen
13	Capnodiales	Mycosphaerellaceae		Mycosphaerella fijiensis	Plant Pathogen
14	Erysiphales	Erysiphaceae		Erysiphe betai	Plant Pathogen
15	Erysiphales	Erysiphaceae		Oidium mangiferae	Plant Pathogen
16	Eurotiales	Trichocomaceae	Penicillium	Penicillium	Plant Pathogen

17	Eurotiales	Trichocomaceae	Aspergillus	Aspergillus awamori	Plant Pathogen
18	Eurotiales	Trichocomaceae		Aspergillus niger	Plant Pathogen
19	Ganodermataceae	Aphylophorales	Bracket fungi	Ganoderma	Plant Pathogen
20	Glomerales	Glomeraceae	Glomus	Glomus	Plant Pathogen
21	Glomerales	Glomeraceae	Gigaspora	Gigaspora	Plant Pathogen

22	Glomerellales	Glomerellaceae		Colletotrichum gloeosporioides	Plant Pathogen
23	Glomerellales	Glomerellaceae		Colletotrichum higginsianum	Plant Pathogen
24	Glomerellales	Glomerellaceae		Colletotrichum musae	Plant Pathogen
25	Helotiales	Sclerotinlaceae		Botrytis cinerea	Plant Pathogen
26	Helotiales	Sclerotinlaceae		Sclerotinia sclerotiorum	Plant Pathogen
27	Hypocerales	Plectosphaerellaceae		Verticillium albo-atrum	Plant Pathogen
28	Hypocerales	Cordycipitaceae	Lecanicillium	Lecanicillium lecanii	Plant Pathogen
29	Hypocerales	Cordycipitaceae	Beauveria bassiana	Beauveria bassiana	Plant Pathogen
30	Hypocerales	Clavicipitaceae	Metarhizium	Metarhizium anisoplea	Plant Pathogen
31	Hypocerales	Hypocreaceae	Trichoderma hamatum	Trichoderma hamatum	Plant Pathogen
32	Hypocerales	Hypocreaceae	Trichoderma harzianum	Trichoderma hamatum	Plant Pathogen
33	Hypocerales	Hypocreaceae	Trichoderma koningii	Trichoderma koningii	Plant Pathogen

34	Hypocerales	Hypocreaceae	Trichoderma viride	Trichoderma viride	Plant Pathogen
35	Hypocerales	Nectriaceae		Fusarium subglutinans	Plant Pathogen
36	Hypocerales	Nectriaceae		Fusarium solani	Plant Pathogen
37	Hypocerales	Nectriaceae		Fusarium oxysporum	Plant Pathogen
38	Hypocerales	Nectriaceae		Fusarium oxysporum	Plant Pathogen
39	Microascales	Ceratocystidaceae		Ceratocystis paradoxa	Plant Pathogen
40	Mucorales	Mucoraceae		Rhizopus stolonifer	Plant Pathogen
41	Peronosporales	Peranosporaceae		Peranospora parasitica	Plant Pathogen
42	Peronosporales	Peranosporaceae		Pseudoperonospora cubensis	Plant Pathogen
43	Peronosporales	Albuginaceae		Albugo candida	Plant Pathogen
44	Peronosporales	Pythiaceae		Pythium dedaryanum	Plant Pathogen
45	Pleaosporales	Didymellaceae		Ascochyta pisi Lib	Plant Pathogen
46	Pleaosporales	Incertae sedis		Phoma glomerata	Plant Pathogen
47	Pleaosporales	Pleosporeceae		Alternaria solani	Plant Pathogen
48	Pleaosporales	Pleosporeceae		Alternaria alternata	Plant Pathogen
49	Pleaosporales	Pleosporeceae		Alternaria brassicae	Plant Pathogen
50	Pleaosporales	Pleosporeceae		Alternaria alternate	Plant Pathogen
51	Pleaosporales	Didymellaceae		Ascochyta rabiei	Plant Pathogen
52	Polyporales	Phanerochaetaceae		Corticium salmonicolor	Plant Pathogen
53	Tricholomaceae	Agaricales	Mushroom	Clitocybe spp	Mushroom
54	Tricholomaceae	Agaricales	Mushroom	Tricholoma spp	Mushroom
55	Uredinales	Pucciniaceae		Uromyces ciceris-arietini	Plant Pathogen

56	Xylariales	Amphisphaeriaceae		Pestalotia mangiferae	Plant Pathogen
57	Xylariales	Amphisphaeriaceae		Pestalotiopsis palmarum	Plant Pathogen

**Annexure- V: List of Microbes recorded at Himayat Bagh**

Sr. No.	Order	Family	Common Name	Scientific Name	Category	Status
1	Actinomycetales	Frankiaceae	Frankiaceae	Frankia sp.	Actinomyce tes	Plant Pathogen
2	Bacillales	Bacillaceae	Bacillus	Bacillus sp.	Bacteria	Plant Pathogen
3	Bacillales	Bacillaceae	Bacillus	Bacillus sp.	Bacteria	Plant Pathogen
4	Burkholderiales	Ralstoniaceae	Ralstonia	Ralstonia solancearum	Bacteria	Plant Pathogen
5	Clostrdiales	Clostridiaceae	Clostridium	Clostridium sp.	Bacteria	Plant Pathogen
6	Enterobacteriales	Enterobacteriaceae	Klebsiella	Klebsiella sp.	Bacteria	Plant Pathogen
7	Nostocales	Nostocaceae	Anabaena	Anabaena sp.	Bacteria	Plant Pathogen
8	Nostocales	Nostocaceae	Nostoc	Nostoc sp.	Bacteria	Plant Pathogen
9	Nostocales	Nostocaceae	Anabaena	Anabaena azollae	Bacteria	Plant Pathogen
10	Pseudomonadales	Pseudomonadaceae	Azotobacter	Azotobacter sp.	Bacteria	Plant Pathogen
11	Pseudomonadales	Pseudomonadaceae	Pseudomonas	Pseudomonas sp.	Bacteria	Plant Pathogen
12	Rhizibiales	Beijerinckiaceae	Beijerinckia	Beijerinckia sp.	Bacteria	Plant Pathogen
13	Rhizibiales	Rhizobiaceae	Rhizobium	Rhizobium sp.	Bacteria	Plant Pathogen
14	Rhodospirillales	Rhodospirillaceae	Azospirillum	Azospirillum sp.	Bacteria	Plant Pathogen

15	Xanthomonadales	Xanthomonaceae	Xanthomonas	Xanthomonas campestris	Bacteria	Plant Pathogen
16	Xanthomonadales	Xanthomonaceae	Xanthomonas	Xanthomonas axonopodis	Bacteria	Plant Pathogen
17	Acholeplasmatales	Acholeplasmataceae	Candidatus	Candidatus phytoplasma	Phytoplasma	Plant Pathogen
18	Unassigned	Nanoviridae	Banana bunchy top virus	Babuvirus	Virus	Plant Pathogen
19	Unassigned	Potyviridae	Papaya ringspot virus	Potyvirus	Virus	Plant Pathogen
20	Unassigned	Potyviridae	Bean common mosaic virus	Potyvirus	Virus	Plant Pathogen
21	Unassigned	Geminiviridae	Okra yellow vein mosaic virus	Begomovirus	Virus	Plant Pathogen
22	Unassigned	Bromoviridae	Cucumber mosaic virus	Cucumovirus	Virus	Plant Pathogen

#### Annexure- VI: List of Mammals recorded at Himayat Bagh

Sr. No.	Order	Family	Common Name	Scientific Name	Status
1.	Rodentia	Miridae	Bandicoot Rat	Bandicota indica	Common
2.	Rodentia	Miridae	House Rat	Rattus rattus	Common
3.	Rodentia	Stripped Squirrel	Striped Squirrel	Funambulus palmarum	Common
4.	Carnivora	Small Indian Mongoose	Small Indian Mongoose	Herpestes javanicus	Uncommon
5.	Chiroptera	Flying Fox	Flying Fox	Pteropus giganteus	Common

6.	Eulipotyphla	Grey Musk Shrew	Grey Musk Shrew	Suncus murinus	Common
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**Annexure- VII: List of Reptiles recorded at Himayat Bagh**

Sr. No.	Order	Family	Common Name	Scientific Name	Status
1	Squamata	Typhlopidae	Common Blind Snake	Ramphotyphlops braminus	Common
2	Squamata	Uropeltidae	Shield Tail	Uropeltis phipsoni	Rare
3	Squamata	Colubridae	Rat Snake	Ptyas mucosus	Very Common
4	Squamata	Colubridae	Common Trinket	Coelognathus Helena	Common
5	Squamata	Colubridae	Common Wolf Snake	Lycodon aulicus	Common
6	Squamata	Colubridae	Checkered Keelback	Xenochrophis piscator	Rare
7	Squamata	Colubridae	Green Keelback	Maeropisthodon plumbicolor	Common
8	Squamata	Colubridae	Blackhead Snake	Sibynophis subpunctatus	Rare
9	Squamata	Colubridae	Banded Racer	Coluber fasciolatus	Rare
10	Squamata	Colubridae	Banded Kukri	Oligodon arnesis	Rare
11	Squamata	Viperidae	Russell's Viper	Daboia russelii	Very Common
12	Squamata	Elapidae	Indian Cobra	Naja naja	Very Common
13	Squamata	Elapidae	Common Krait	Bungarus caeruleus	Rare



**Annexure – VIII: List of Birds recorded at Himayat Bagh**

<b>Sr. No.</b>	<b>Order</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
1	Galliformes	Phasianidae	Grey Francolin	Francolinus pondicerianus	Resident
2			Indian Peafowl	Pavo cristatus	Resident
3	Pelecaniformes	Threskiornithidae	Red-naped ibis	Pseudibis papillosa	Resident
4	Pelecaniformes	Ardeidae	Little egret	Egretta garzetta	Resident
5			Indian pond heron	Ardeola grayii	Resident
6			Cattle egret	Bubulcus ibis	Resident
7			Black-crowned night heron	Nycticorax nycticorax	Resident
8	Suliformes	Phalacrocoracidae	Great cormorant	Phalacrocorax carbo	Resident
9			Little cormorant	Microcarbo niger	Resident
10	Accipitriformes	Accipitridae	Oriental Honey Buzzard	Pernis ptilorhynchus	Resident
11			Black kite	Milvus migrans	Resident
12			Black shouldered Kite	Elanus caeruleus	Resident
13			Shikra	Accipiter badius	Resident
14			Changeable hawk-eagle	Nisaetus cirrhatus	Resident
15	Gruiformes	Rallidae	White-breasted waterhen	Amaurornis phoenicurus	Resident
16	Charadriiformes	Turnicidae	Barred buttonquail	Turnix suscitator	Resident
17	Charadriiformes	Charadriidae	Red-wattled lapwing	Vanellus indicus	Resident
18	Charadriiformes	Scolopacidae	Green sandpiper	Tringa ochropus	Migratory

19	Columbiformes	Columbidae	Feral pigeon	Columba livia	Resident
20	Columbiformes	Columbidae	Eurasian collared dove	Streptopelia decaocto	Resident
21	Columbiformes	Columbidae	Laughing dove	Streptopelia senegalensis	Resident

22	Columbiformes	Columbidae	Yellow-footed green pigeon	Treron phoenicopterus	Resident
23	Psittaciformes	Psittaculidae	Alexandrine parakeet	Psittacula eupatria	Resident
24	Psittaciformes	Psittaculidae	Rose-ringed parakeet	Psittacula krameri	Resident
25	Psittaciformes	Psittaculidae	Plum-headed parakeet	Psittacula cyanocephala	Resident
26	Cuculiformes	Cuculidae	Common Hawk-cuckoo	Hierococcyx varius	Resident
27	Cuculiformes	Cuculidae	Asian koel	Eudynamys scolopaceus	Resident
28	Cuculiformes	Cuculidae	Greater Coucal	Centropus sinensis	Resident
29	Strigiformes	Strigidae	Sotted Owlet	Athene brama	Resident
30	Strigiformes	Strigidae	Mottles Wood owl	Strix ocellata	Resident
31	Apodiiformes	Apodidae	Asian Palm Swift	Cypsiurus balasiensis	Resident
32	Apodiiformes	Apodidae	Little Swift	Apus affinis	Resident
33	Coraciiformes	Alcedinidae	Common Kingfisher	Alcedo atthis	Resident
34	Coraciiformes	Alcedinidae	White-throated Kingfisher	Halcyon smyrnensis	Resident
35	Coraciiformes	Meropidae	Green Bee-eater	Merops orientalis	Resident
36	Coraciiformes	Upupidae	Hoopoe	Upupa epops	Resident
37	Coraciiformes	Bucerotidae	Indian Grey Hornbill	Ocyrceros birostris	Resident
38	Piciformes	Megalaimidae	Coppersmith Barbet	Psilopogon haemacephalus	Resident

39	Piciformes	Picidae	Yellow-crowned Woodpecker	Leiopocus mahrattensis	Resident
40	Passeriformes	Aegithinidae	Common Iora	Aegithina tiphia	Resident
41	Passeriformes	Campephagidae	Black-headed Cuckooshrike	Coracina melanoptera	Resident
42	Passeriformes	Campephagidae	Small minivet	Pericrocotus cinnamomeus	Resident
43	Passeriformes	Pachycephalidae	Long-tailed shrike	Lanius schach	Resident
44	Passeriformes	Oriolidae	Indian Golden Oriole	Oriolus kundoo	Resident
45	Passeriformes	Dicruridae	Black Drongo	Dicrurus macrocerus	Resident
46	Passeriformes	Dicruridae	Ashy Drongo	Dicrurus leucophaeus	Migratory
47	Passeriformes	Rhipiduridae	White-browed Fantail	Rhipidura aeruola	Resident
48	Passeriformes	Monarchidae	Indian Paradise Flycatcher	Terpsiphone paradisi	Resident
49	Passeriformes	Corvidae	Rufous Treepie	Dendrocitta vagabunda	Resident

50	Passeriformes	Corvidae	House Crow	Corvus splendens	Resident
51	Passeriformes	Corvidae	Jungle Crow	Corvus macrorhynchos	Resident
52	Passeriformes	Stenostiridae	Grey-headed Canary Flycatcher	Culicicapa ceylonensis	Resident
53	Passeriformes	Paridae	Cinereous Tit	Parus cinereus	Resident
54	Passeriformes	Pycnonotidae	Red-whiskered Bulbul	Pycnonotus jocosus	Resident
55	Passeriformes	Pycnonotidae	Red-vented Bulbul	Pycnonotus cafer	Resident
56	Passeriformes	Hirundinidae	Dusky Crag Martin	Ptyonoprogne concolor	Resident
57	Passeriformes	Hirundinidae	Barn Swallow	Hirundo rustica	Migratory
58	Passeriformes	Hirundinidae	Red-rumped Swallow	Cecropis daurica	Resident

59	Passeriformes	Acrocephalidae	Blyth's Red Warbler	Acrocephalus dumetorum	Resident
60	Passeriformes	Phylloscopidae	Greenish Warbler	Seicurus trochiloides	Migratory
61	Passeriformes	Sylviidae	Yellow-eyed Babbler	Chrysomma sinense	Resident
62	Passeriformes	Sylviidae	Fantail Warbler	Cisticola juncidis	Resident
63	Passeriformes	Sylviidae	Ashy Prinia	Prinia socialis	Resident
64	Passeriformes	Sylviidae	Plain Prinia	Prinia inornata	Resident
65	Passeriformes	Sylviidae	Common Tailorbird	Orthotomus sutorius	Resident
66	Passeriformes	Leiothrichidae	Common Babbler	Turboides caudatus	Resident
67	Passeriformes	Leiothrichidae	Large Grey Babbler	Argya malcomi	Resident
68	Passeriformes	Leiothrichidae	Jungle Babbler	Turboides striata	Resident
69	Passeriformes	Zosteropidae	Oriental White-eye	Zosterops palpebresus	Resident
70	Passeriformes	Sturnidae	Jungle Myna	Acridotheres fuscus	Resident
71	Passeriformes	Sturnidae	Common Myna	Acridotheres tristis	Resident
72	Passeriformes	Sturnidae	Chestnut-tailed Starling	Sturnia malabarica	Migratoy
73	Passeriformes	Sturnidae	Brahminy Starling	Sturnia pagodarum	Resident
74	Passeriformes	Muscicapidae	Red-breasted Flycatcher	Ficedula parva	Migratory
75	Passeriformes	Muscicapidae	Taiga Flycatcher	Ficedula albicilla	Resident
76	Passeriformes	Muscicapidae	Tickell's Blue Flycatcher	Cyornis tickelliae	Resident
77	Passeriformes	Muscicapidae	Oriental Magpie Robin	Copsychus saularis	Resident
78	Passeriformes	Muscicapidae	Indian Robin	Saxicoloides fulicatus	Resident
79	Passeriformes	Dicaeidae	Pale-billed Flowerpecker	Dicaeum erythrorhynchos	Resident
80	Passeriformes	Nectariniidae	Purple-rumped Sunbird	Leptocoma zeylonica	Resident
81	Passeriformes	Nectariniidae	Purple Sunbird	Cinnypris asiaticus	Resident

82	Passeriformes	Nectariniidae	House Sparrow	Passer domesticus	Resident
83	Passeriformes	Ploceidae	Baya Weaver	Ploceus philippinus	Resident
84	Passeriformes	Estrildidae	Indian Silverbill	Euodice malabarica	Resident
85	Passeriformes	Estrildidae	Scaly-breasted Munia	Lonchura punctulata	Resident
86	Passeriformes	Motacillidae	White Wagtail	Motacilla alba	Migratory
87	Passeriformes	Motacillidae	White-browed Wagtail	Motacilla maderaspatensis	Resident
88	Passeriformes	Motacillidae	Yellow Wagtail	Motacilla flava	Migratory
89	Passeriformes	Motacillidae	Grey Wagtail	Motacilla finera	Migratory

**Note: Separate detailed research report on Birds, Reptiles, and Butterflies is attached.**

#### **Annexure- IX: List of Frogs recorded at Himayat Bagh**

<b>Sr. No.</b>	<b>Order</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
1.	Anura	Bufo	Asian common toad	Duttaphrynus melanostictus	Common
2.	Anura	Dicroglossidae	Indian Skipper Frog	Euphlyctis cyanophlyctis	Common
3.	Anura	Dicroglossidae	Indian Bullfrog	Hoplobatrachus tigerinus	Uncommon
4.	Anura	Microhylidae	Ornate Narrow-mouthed Frog	Microhyla ornata	Common

#### **Annexure- X: Turtle recorded at Himayat Bagh**

<b>Sr. No.</b>	<b>Order</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
1.	Testudines	Trionychidae	Leith's softshell turtle	Nilssonina leithii	Endemic

**Annexures- XI: List of Insects recorded at Himayat Bagh**

<b>Sr. No.</b>	<b>Order</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Category</b>	<b>Status</b>
1	Coleoptera	Cerambycidae	Mango Stem Borer	Batocera rubus	Borer	Insect Pest
2	Coleoptera	Coccinellidae	Lady Bird Beetle	Coccinella septumpunctata	Beetle	Beneficial Insects
3	Coleoptera	Coccinellidae	Lady Bird Beetle	Menochilus sexmaculata	Beetle	Predator
4	Coleoptera	Coccinellidae	Lady Bird Beetle	Hippodamia variegata	Beetle	Predator
5	Coleoptera	Coccinellidae	Transverse Lady Beetle	Coccinella transversalis	Beetle	Predator
6	Coleoptera	Coccinellidae	Seven-spot Lady Bird Beetle	Coccinella septempunctata	Beetle	Predator
7	Coleoptera	Coccinellidae	Ladybird beetle	Chilocorus nigritus	Beetle	Predator
8	Coleoptera	Coccinellidae	Three-striped lady beetle	Brumoides suturalis	Beetle	Predator
9	Coleoptera	Coccinellidae	Ladybird beetle	Illeis cincta	Beetle	Predator
10	Coleoptera	Coccinellidae	Ladybird beetle	Scymnus coccivora	Beetle	Predator
11	Coleoptera	Coccinellidae	Ladybird beetle	Hyperaspis maindroni	Beetle	Predator
12	Coleoptera	Coccinellidae	Ladybird beetle	Cryptolaemus montrouzieri	Beetle	Predator
13	Coleoptera	Curculionidae	Mango stone weevil	Sternochetus mangiferae	Weevil	Insect Pests
14	Coleoptera	Scarabaeidae	Rhinoceros beetle	Oryctes rhinoceros	Beetle	Insect Pests
15	Diptera	Tephritidae	Mango fruit fly	Bactrocera dorsalis	Fly	Insect Pests
16	Diptera	Tachinidae	Tachnid flies	Juriniopsis adusta	Fly	Beneficial insects

17	Diptera	Syrphidae	Hover flies	Taxomerus geminates	Fly	Beneficial insects
18	Diptera	Syrphidae	Hoover flies	Triomata coccidivora	Hoover flies	Predator

19	Hemiptera	Aleyrodidae	Spiraling whitefly	Alerodicus disperses	Sucking insect	Insect Pests
20	Hemiptera	Aphidae	Aphids	Aphis gossypii	Sucking insect	Insect Pests
21	Hemiptera	Membrocoidea	Jassids/Mango	Amitodus atkinsoni	Sucking insect	Insect Pests
22	Hemiptera	Pseudococcidae	Mealy bug	Ferrisia virgata	Bug	Insect Pests
23	Hemiptera	Pseudococcidae	Papaya Mealybug	Paracoccus marginatus	Bug	Insect Pests
24	Hymenoptera	Aphelinidae	Wasp	Marietta leopardina	Wasp	Predator
25	Hymenoptera	Aphelinidae		Encarsia flavoscutellum	Wasp	Parasite
26	Hymenoptera	Aphelinidae		Encarsia sp.	Wasp	Parasite
27	Hymenoptera	Apidae	Honey Bees	Apis dorsata	Bees	Beneficial insects
28	Hymenoptera	Apidae	Honey Bees	Apis serrana	Bees	Beneficial insects
29	Hymenoptera	Apidae	Rock Honey Bees	Apis dorsata	Honeybee	Pollinators
30	Hymenoptera	Apidae	Indian Honey Bees	Apis cerana indica	Honeybee	Pollinators
31	Hymenoptera	Apidae	Little Honey Bees	Apis florea	Honeybee	Pollinators
32	Hymenoptera	Apidae	Dammer Honey Bees	Melipona fasciata	Honeybee	Pollinators

33	Hymenoptera	Braconidae	Breconids	Bracon brevicornis	Bug	Beneficial insects
34	Hymenoptera	Braconidae	Apentalis	Apentalis angaleti	Wasp	Beneficial insects
35	Hymenoptera	Braconidae		Apanteles sp.		Parasite
36	Hymenoptera	Braconidae		Bracon sp.		Parasite
37	Hymenoptera	Braconidae		Cotesia sp.		Parasite
38	Hymenoptera	Encyrtidae		Pseudleptomastix Mexicana		Parasite
39	Hymenoptera	Encyrtidae		Acerophagus papayae		Parasite
40	Hymenoptera	Encyrtidae	Wasp	Acerophagus papaya	Wasp	Beneficial

41	Hymenoptera	Encyrtidae		Anagyrus sp.		Parasite
42	Hymenoptera	Encyrtidae		Aenasius arizonensis		Parasite
43	Hymenoptera	Eulophidae	Wasp	Prochiloneurus sp.	Wasp	Predator
44	Hymenoptera	Ichneumonidae		Campoletis chlorideae		
45	Hymenoptera	Vespidae	Social Wasp	Vespula germanica	Wasp	Predator
46	Hymenoptera	Vespidae	Solitary Wasp	Vespa cincta Linn.	Wasp	Predator
47	Hymenoptera	Vespidae	Potter Wasp	Vespa cincta Nigra	Wasp	Predator
48	Hymenoptera	Vespidae	Predatory Wasp	Vespa uncinata Fab.	Wasp	Predator
49	Lepidoptera	Coossidae	Bark Eating Caterpillar	Inderbala quadrinotata	Borer	Insect Pests
50	Lepidoptera	Crambidae	Brinjal Shoot	Leucinodes orbonalis	Moth	Insect Pests
51	Lepidoptera	Crambidae	Pod Borer	Maruca testulalis	Moth	Insect Pests



52	Lepidoptera	Cryptophasidae	Black Headed Caterpillar	Opisina arnosella	Moth	Insect Pests
53	Lepidoptera	Lycaenidae		Spalgis epius		Predator
54	Lepidoptera	Noctuidae	Fruit Borer	Helicoverpa armigera	Moth	Insect Pests
55	Lepidoptera	Noctuidae	Caterpillar	Spodoptera litura	Moth	Insect Pests
56	Lepidoptera	Noctuidae	Moth	Eublemma amabilis	Moth	Predator
57	Lepidoptera	Nolidae	Shoot & Fruit Borer	Earius vitella	Moth	Insect Pests
58	Lepidoptera	Papilionidae	Citrus Butterfly	Papilio domelus	Butterfly	Pollinators
59	Lepidoptera	Papilionidae	Anar Butterfly	Virachola isocrates	Butterfly	Pollinators
60	Lepidoptera	Papilionidae	Paddy Butterfly	Melantis leda	Butterfly	Pollinators
61	Lepidoptera	Papilionidae	Cabbage Butterfly	Pieris brassicae	Butterfly	Pollinators
62	Lepidoptera	Papilionidae	Krishna Peacock	Papilio castor	Butterfly	Pollinators
63	Lepidoptera	Papilionidae	Butterfly	Papilio Memnon	Butterfly	Pollinators
64	Lepidoptera	Papilionidae	Common Mormon	Papilio polymnestor	Butterfly	Pollinators
65	Lepidoptera	Plutellidae	Diamond Back Moth	Plutella xylostella	Butterfly	Insect Pests
66	Lepidoptera	Pyralidae	Dipha	Dipha aphidivora		Predator
67	Lepidoptera		Mustard Sawfly	Athalia lugens	Moth	Insect Pests
68	Neuroptera	Chrysopidae	Green Lace Wing	Chrysoperla spe. Steimann	Moth	Beneficial Insects
69	Neuroptera	Chrysopidae	Chrysopa	Chrysoperla zastrowi sillemi		Predator
70	Neuroptera	Chrysopidae	Wasp	Mallada boninensis	Wasp	Predator
71	Neuroptera	Hemerobiidae	Micromus	Micromus igorotus		Predator
72	Thysanoptera	Aleyrodidae	White Fly	Bemisia tabaci	Sucking Insect	Insect Pests

73	Thyasanopetra	Thripidae	Thrips	Thrips tabaci	Sucking Insect	Insect Pests
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**Annexure XII: Details of crop Germplasm Collection at Himayat Bagh**

Name of the Crop	Varieties	Name of the Crop	Varieties
<b>Fruit Crops</b>			
Mango	07	<b>Plantation crop</b>	
		Coconut	01
Guava L49	01	Chiku	01
Pomegranate	01		
Tamarind	05		
Custard Apple	04		
Amla	04		
Jamun	02		
Ber	01		
Bael	01		
Sweet Lime	01		
Kagzi Lime(local)	02		
Wood Apple	01		

**A- Section**

<b>Sr. No.</b>	<b>Name of Plant</b>	<b>Big trees</b>	<b>Medium trees</b>	<b>Small trees</b>	<b>Total</b>
1	Mango	162	107	09	278
2	Tamarind	207	184	09	400
3	Java Plum	22	-	-	22
4	Coconut	13	02	-	15
5	Ashoka	80	-	-	80
6	Neem	24	04	04	32
7	Palm	18	-	-	18
8	Wood Plant	21	-	-	21
9	Sugar Apple (Ramphal)	11	07	-	18
10	Gum Arabic Tree	11	05	-	16
11	Amla	03	-	-	03
12	Thuja	-	02	-	02
13	Reetha	04	-	-	04
14	Frangipani	-	05	-	05
15	Areca nut	02	-	-	02
16	Other	61	50	10	121
<b>Total</b>					<b>1037</b>

**B- Section**

<b>Sr. No.</b>	<b>Name of Plant</b>	<b>Big trees</b>	<b>Medium trees</b>	<b>Small trees</b>	<b>Total</b>
1	Mango	183	105	07	295
2	Tamarind	61	07	-	68
3	Java Plum	14	-	-	14
4	Coconut	153	13	05	171
5	Ashoka	05	-	-	05
6	Palm	90	-	-	90
7	Wood Plant	01	-	-	01
8	Gum Arabic Tree	95	65	04	164
9	Thuja	-	11	-	11
10	Chikoo	02	202	88	292
11	Guava	265	354	17	636
12	Drumstick	-	72	-	72
13	Sweet lime	-	150	21	171
14	Pomegranate	-	162	-	162
15	Indian jujube	-	02	-	02
16	Eucalyptus	15	-	-	15
17	Neem	70	40	25	135
18	Lemon	-	-	95	95
19	Rangpur	-	40	-	40
20	Other	120	45	20	185
<b>TOTAL</b>					<b>2624</b>

**C - Section**

<b>Sr. No.</b>	<b>Name of the Plant</b>	<b>Big Trees</b>	<b>Medium Trees</b>	<b>Small Trees</b>	<b>Total</b>
1	Mango	268	2291	130	2689
2	Tamarind	153	211	40	404
3	Java Plum	68	44	-	112
4	Coconut	-	12	145	157
5	Ashoka	-	04	-	04
6	Neem	36	43	15	94
7	Palm	16	-	-	16
8	Wood Apple	133	08	-	141
9	Phycus	-	-	41	41
10	Acacia	115	70	13	118
11	Jackfruit	-	02	-	02
12	Indian Gooseberry	-	39	-	39
13	Bamboo	-	08	-	08
14	Carandas Plum	-	-	351	351
15	Sapota	-	33	-	33
16	Drumstick Tree	-	19	-	19
17	Sweet Lemon	-	50	-	50
18	Butter Tree	12	-	-	12
19	Indian Jujube	24	09	-	33
20	Tasmanian Blue Gum	29	-	-	29

21	Bimba	-	23	-	23
22	Custard Apple	-	04	273	277
23	Other	40	47	09	96
24	Almond	01	-	21	22
25	Indian Soapberry	02	-	-	02
26	Sacred Fig	-	-	02	02
27	Vegetable Hummingbird	-	21	-	21
28	Banyan	-	01	01	02
29	Pongame Oiltree	01	-	-	01
30	Christmas Tree	01	-	-	12
31	Terminalia Bellirica	07	-	-	07
32	Bottle Palm	03	-	-	03
<b>Total</b>					<b>4889</b>

# Importance

Biodiversity provides functioning ecosystems that supply oxygen, clean air, and water, pollination of plants, pest control, wastewater treatment, and many ecosystem services. Biodiversity provides functioning ecosystems that supply oxygen, clean air, and water, pollination of plants, pest control, wastewater treatment, and many ecosystem services. Biodiversity plays a key role in providing numerous irreplaceable services.

Biodiversity plays a key role in providing numerous irreplaceable services to the community. Biodiversity is an essential part of the solution to climate change. Biodiversity is an integral part of culture and identity. Biodiversity is critically important to human health, economies and livelihoods. Biodiversity makes the earth habitable. Biodiverse ecosystems provide nature-based solutions that buffer us from natural disasters such as floods and storms, filter our water and regenerate our soils.

## Role in Carbon Sequestration

Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. Carbon sequestration describes the long-term storage of carbon dioxide or other forms of carbon to either mitigate or defer global warming and avoid dangerous climate change.

**Himayat Bagh Garden Area** is the main source of the soil organic carbon, either from the decomposition of aerial plant parts or underground plant parts. e.g., roots in the form of root death, root exudates and root respiration. About 40% of the photosynthates synthesized in the plant parts is lost through the root system into the rhizosphere within an hour and the rate of loss is influenced by several factors.

**Himayat Bagh Garden Area** is an important factor in capturing carbon. This is not only important for the communities and habitats of people, plants, and animals now, but for future generations. If enough carbon is sequestered, and emissions reduced, then the greenhouse effect will be reduced in the future, resulting in fewer warmer days as well as less occurrence of drought and other extreme weather cycles associated with climate change.



# Conclusion

Most biodiversity resources are consumed by humans, so it is their primary responsibility to preserve and protect biodiversity to protect the earth. The richness of the species, the ecosystem, the environment, and the sustainable growth of life on earth are important. The area is unique, ecologically fragile having rich biodiversity comprising of any one or more of the components such as; species richness, presence of rare species, medicinal plants, wild species, keystone species, etc.

Each plant species has an important role in the ecosystem which results in intangible benefits to people. In addition, plants are important to humans in many ways, such as serving as a source of food. They keep the climate stable, oxygenate the air. Plants play an important role in the effective functioning of these systems. As plants are high up in the food chain, they are also good indicators of the general state of our biodiversity. The study indicates these areas had high species richness of plants & eco-touristic potential. This area is a very important area for plant conservation & study. Plants are so integral part of our ecosystem to maintain a balance between the factors which are present in the environment. The need for conservation in the area leads to an increase in the diversity of plants in the future & to maintain a healthy ecosystem.