

**GREEN AUDIT REPORT**  
**OF**  
**SEVADAL MAHILA MAHAVIDYALAYA**  
**SAKKARDARA SQUARE UMRER ROAD,**  
**NAGPUR- 440 024**



**Year: 2019-20**



Prepared by:

**Enrich Consultants**

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**Principal**

Sevaldal Mahila Mahavidyalaya  
Umrer Road, Nagpur-9.

**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**



**Maharashtra Energy Development Agency**

(A Government of Maharashtra undertaking)

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ECN/2018-19/CR-05/4174

19<sup>th</sup> September, 2018

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

**Name and Address of the firm** : **Enrich Consultants**  
Yashashree, Plot No. 26, Nirmal Bag Society,  
Near Muktangan English School,  
Parvati, Pune - 411009.

**Registration Category** : Empanelled *Consultant for Energy Conservation Programme*

**Registration Number** : **MEDA/ECN/CR-05/2018-19/EA-03**

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31<sup>st</sup> March 2021** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

  
(Smita Kudarikar)  
General Manager (EC)

  
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# Enrich Consultants

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Ref: EC/SMM/19-20/19

Date: 12/08/2020

## CERTIFICATE

This is to certify that we have conducted Green Audit at Sevadal Mahila Mahavidyalaya, Nagpur - 440 024 in the Academic year 2019-20.

The College has adopted following Green Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Maximum Usage of Day Lighting
- Provision of Separate bins for Dry & Wet Waste
- The College has installed Septic and is clean periodically.
- Implementation of Rain Water Management Project
- Maintenance of good Internal Road
- Tree Plantation in the campus
- Creation of awareness by Display of Posters on Resource Conservation

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Enrich Consultants,



A Y Mehendale,  
Certified Energy Auditor  
EA-8192



Principal  
Sevadal Mahila Mahavidyalaya  
Umrer Road, Nagpur-9.

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## **ACKNOWLEDGEMENT**

We Enrich Consultants, Pune, express our sincere gratitude to the management of Sevadal Mahila Mahavidyalaya, Nagpur - 440 024 for awarding us the assignment of Green Audit of their Campus for the Academic Year: 19-20.

We are thankful to all the Principal and Staff members for helping us during the field study.



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## EXECUTIVE SUMMARY

1. Sevadal Mahila Mahavidyalaya, Nagpur consumes Energy in the form of **Electrical Energy** used for various Electrical Equipment, office & other facilities.

### 2. Present Energy Consumption & CO<sub>2</sub> Emissions:

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	9108	8.197
2	Maximum	1628	1.465
3	Minimum	431	0.387
4	Average	759	0.683

### 3. Various initiatives taken for Energy Conservation:

- Usage of Energy Efficient LED Lighting
- Maximum Usage of Day Lighting

### 4. Usage of Renewable Energy & CO<sub>2</sub> Emission Reduction:

- As on today College has not installed solar rooftop power plant, solar thermal water heating plant. It is recommended to install solar power rooftop system and solar thermal water heating plant on the college building as per availability of funds.
- College has installed solar street light systems in the premises.

### 5. Waste Management:

#### 5.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper, plastic waste is handed over to Authorized waste collecting agent for further recycling.

#### 5.2 Organic Waste Management:

The College has installed bio-composting pit to converts bio-degradable wastes into the bio-fertilizers.

#### 5.3 Liquid Waste Management:

The College has installed Septic tanks and is cleaned periodically.

#### 5.4 E-Waste Management:

The E-Waste is disposed of through Authorized E-Waste collecting agency.

### 6. Rain Water Management:

  
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The College has installed the Rainwater management project, the rain water falling on the terrace is collected and is used for increasing the under the underground water table.

#### 7. Green & Sustainable Initiatives

- Maintenance of good Internal Road
- Maintenance of Internal Garden
- Display of Posters on Resource Conservation
- Best Practices and Initiative for Social Awareness

#### 8. Notes & Assumptions:

1. 1 kWh of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere

#### 9. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)



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## ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO <sub>2</sub>	Carbon Di Oxide
Qty	Quantity



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## **CHAPTER-I INTRODUCTION**

### **1.1 Objectives:**

1. To study present Energy Consumption
2. To Study CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Management
6. Study of Green & Sustainable Practices

### **1.2 General Details of College: Table No 1:**

<b>No</b>	<b>Head</b>	<b>Particulars</b>
1	Name of Institution	Sevadal Mahila Mahavidyalaya
2	Address	Sakkardara Square Umrer Road, Nagpur 440 024
3	Affiliation	Rashtra Sant Tukodoji Maharaj, Nagpur, University



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## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 2: Electrical Bill Analysis- 2019-20:

No	Month	Energy Purchased, kWh
1	Apr-19	1628
2	May-19	1132
3	Jun-19	602
4	Jul-19	598
5	Aug-19	687
6	Sep-19	847
7	Oct-19	834
8	Nov-19	547
9	Dec-19	607
10	Jan-20	431
11	Feb-20	637
12	Mar-20	558
13	Total	9108
14	Maximum	1628
15	Minimum	431
16	Average	759

Chart No 1: Variation in Monthly Energy Consumption:

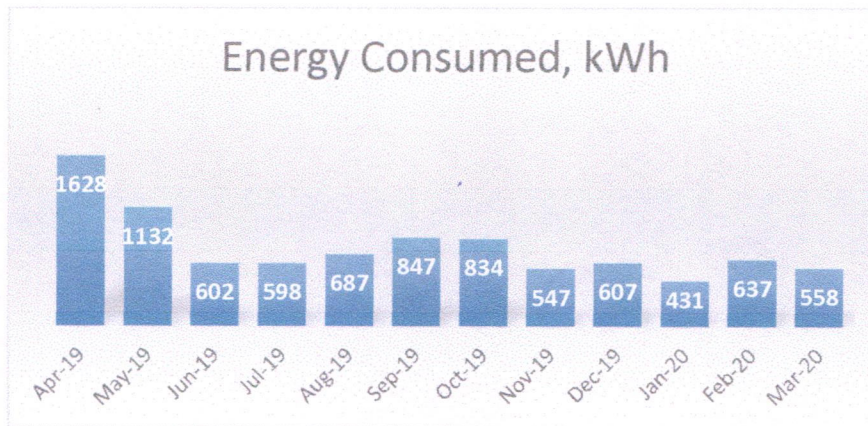


Table No 3: Variation in Important Parameters:

No	Parameter/ Variation	Energy Purchased, kWh
1	Total	9108
2	Maximum	1628
3	Minimum	431
4	Average	759

### CHAPTER III STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy for various Electrical gadgets.

#### Basis for computation of CO<sub>2</sub> Emissions:

The basis of Calculation for CO<sub>2</sub> emissions is as under.

- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere

Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No4: Month wise CO<sub>2</sub> Emissions:

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Apr-19	1628	1.4652
2	May-19	1132	1.0188
3	Jun-19	602	0.5418
4	Jul-19	598	0.5382
5	Aug-19	687	0.6183
6	Sep-19	847	0.7623
7	Oct-19	834	0.7506
8	Nov-19	547	0.4923
9	Dec-19	607	0.5463
10	Jan-20	431	0.3879
11	Feb-20	637	0.5733
12	Mar-20	558	0.5022
13	Total	9108	8.1972
14	Maximum	1628	1.4652
15	Minimum	431	0.3879
16	Average	759	0.6831



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Chart No 2: Month wise CO<sub>2</sub>Emissions:

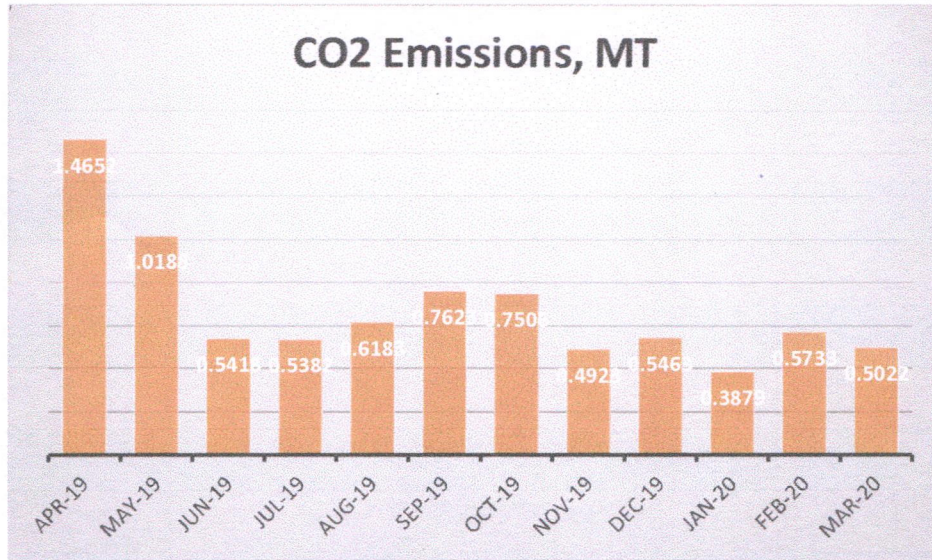


Table No 5: Variation in Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	CO2 Emissions, MT
1	Total	9108	8.1972
2	Maximum	1628	1.4652
3	Minimum	431	0.3879
4	Average	759	0.6831

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## **CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY**

As on today College has install solar street light in the premises. But it is recommended to installed solar rooftop project on the college building.



  
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## **CHAPTER V STUDY OF WASTE MANAGEMENT**

### **5.1 Segregation of Waste at Source:**

The College has maintained good cleaning practices in the premises. The Waste is segregated at source and the recyclable waste, like paper waste is handed over to authorized waste collecting agent for further recycling.



### **5.2 Organic Waste Management:**

The College has installed bio-composting pit to convert, bio degradable wastes into the bio-fertilizers.



### **5.3 Liquid Waste Management:**

The College has installed Septic tanks and is cleaned periodically.

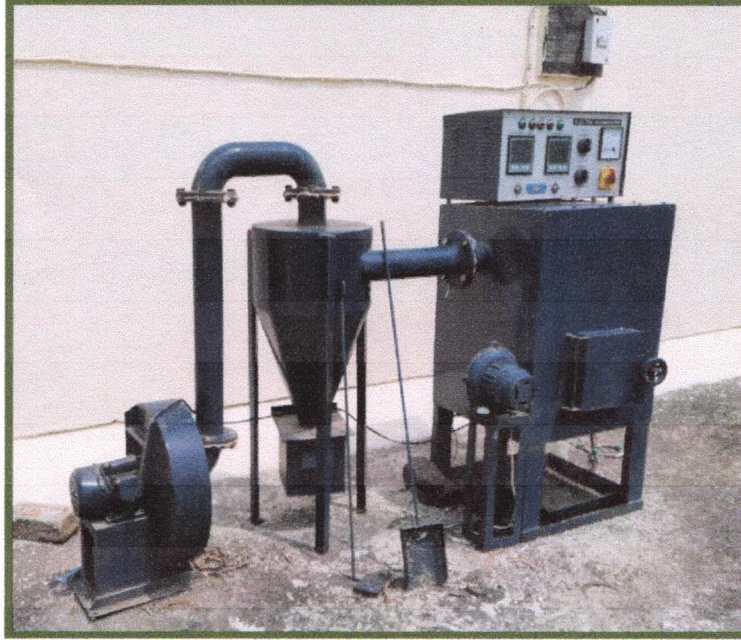
### **5.4 E-Waste Management:**

The E-Waste is disposed of through Authorized Agency.

  
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### 5.5 Sanitary Waste Incinerator:

The College has installed Sanitary Waste Incinerator for sanitary waste disposal.



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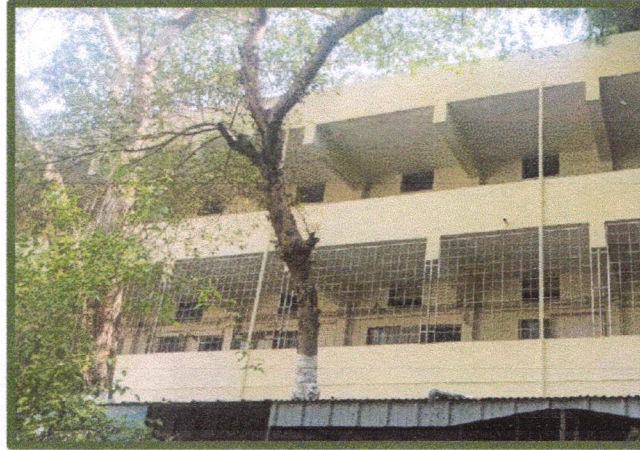



## **CHAPTER-VI**

### **STUDY OF RAIN WATER MANAGEMNT**

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to increase the underground water table.

**Photograph of Rain water Harvesting Pipe:**



  
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## **CHAPTER-VII**

### **STUDY OF GREEN & SUSTAINABLE PRACTICES**

#### **7.1 Pedestrian Friendly Roads:**

The College has well maintained internal road to facilitate the easy movement of the students within the campus.

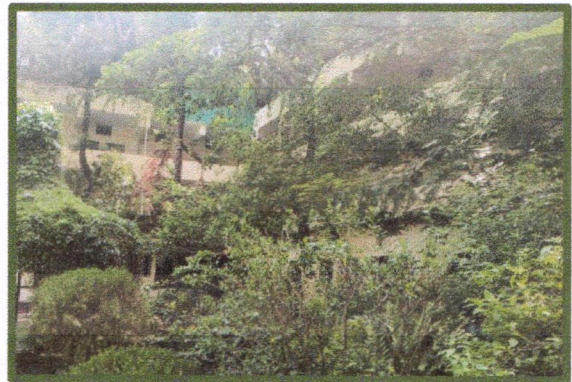
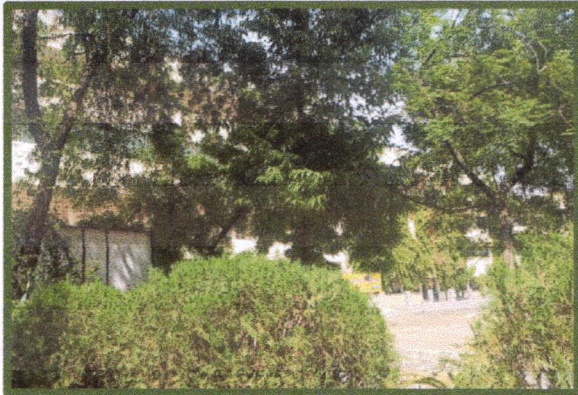
#### **Photograph of Internal Road:**




#### **7.2 Internal Tree Plantation:**

The College has well maintained landscaped garden in the campus.

#### **Photograph of Tree plantation:**



  
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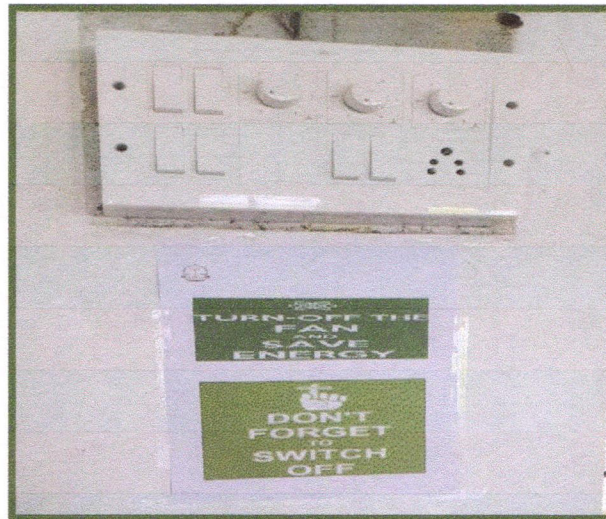
### 7.3 Provision of Ramp:

The College has not facility for ramp, It is recommended to construct ramp in the College for easy movement for Divyaang.

### 7.4 Creation of Awareness about Energy Conservation:

The College has displayed posters emphasizing on importance of Energy Conservation.

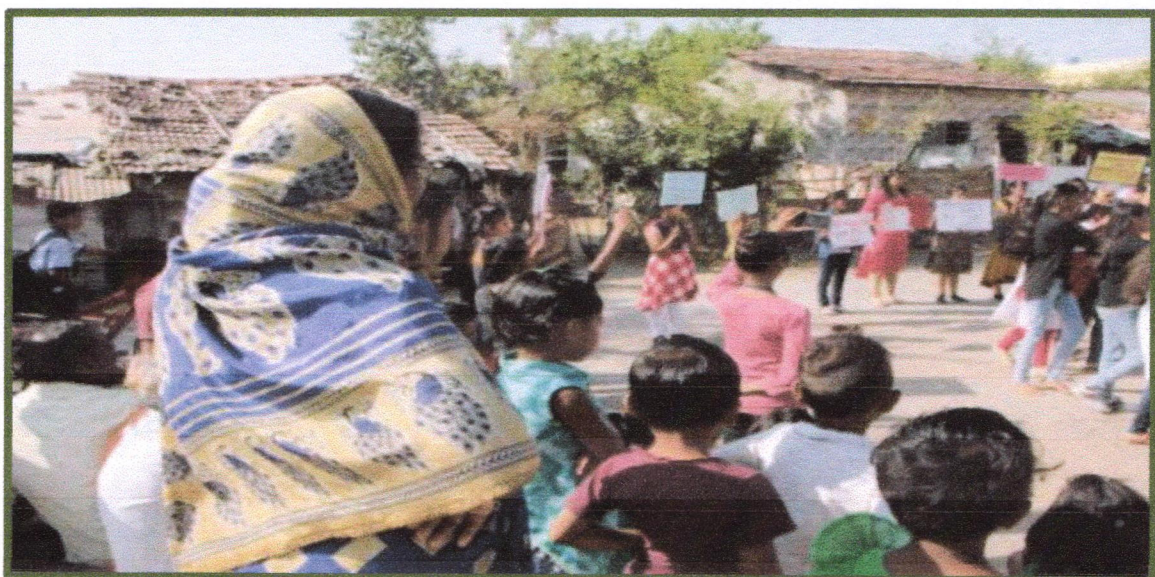
**Photograph of Poster on Energy Conservation:**



### 7.5 Best Practices and Initiative for Social Awareness:

The College has taken initiative for different social awareness program, about water and forest conservation, trees plantations, society cleanness etc under National Service Scheme.

**Photograph of Best Practices and Initiative:**



**ANNEXURE-1:**  
**DETAILS OF TREES & PLANTS:**

Sr. No.	Genus	Family	Common /Vernacular name	Habit
1	<i>Terminalia arjuna</i>	Combretaceae	Arjun	Tree
2	<i>Delonix regia</i>	Fabaceae (Caesalpiaceae)	Royal Poinciana /Gulmohar	Tree
3	<i>Caesalpinia pulcherrima</i>	Fabaceae (Caesalpiaceae)	Gulmohar	Tree
4	<i>Saracaasoca</i>	Fabaceae (Caesalpiaceae)	Ashoka tree	Tree
5	<i>Pongamia pinnata</i>	Fabaceae (Papilionaceae)	Indian beech/ Karanj	Tree
6	<i>Syzygiumcumini</i>	Myrtaceae	Jamun	Tree
7	<i>Acacia auriculiformis</i>	Fabaceae (Mimosaceae)	Australian babool	Tree
8	<i>Alstoniascholaris</i>	Apocynaceae	Devil's tree/Saptparni	Tree
9	<i>Bauhinia variegata</i>	Fabaceae (Caesalpiaceae)	Kachnar/ Apta	Tree
10	<i>Caryotaurens</i>	Arecaceae	Fish tail palm	Tree
11	<i>Ficus racemosa</i>	Moraceae	Cluster fig/Umber	Tree
12	<i>Borassus flabellifer</i>	Arecaceae	Fan palm	Tree
13	<i>Murrayapaniculata</i>	Rutaceae	Orange jasmine/Kamini/kunti	Shrub
15	<i>Roystonea regia</i>	Arecaceae	Royal palm	Tree
16	<i>Peltophorumpterocarpu m</i>	Fabaceae (Caesalpiaceae)	Peltophorum	Tree
17	<i>Polyalthia longifolia</i>	Annonaceae	False Ashoka/	Tree
18	<i>Ficus religiosa</i>	Moraceae	Peepal	Tree
19	<i>Azadirachtaindica</i>	Meliaceae	Neem	Tree
20	<i>Adathodavasica</i>	Acanthaceae	Adulsa/ Vasaka	Shrub
21	<i>Hibiscus rosa-sinensis</i>	Malvaceae	Jaswand	Shrub
21	<i>Cycas revoluta</i>	Cycadaceae	Cycas	Shrub
22	<i>Zamia pygmaea</i>	Zamiaceae	Zamia	
23	<i>Thuja occidentalis</i>	Cupressaceae	Thuja/Vidya	Shrub
24	<i>Tecoma stans</i>	Bignoniaceae	Tecoma/Yellow elder	Shrub
25	<i>Quisqualis indicum</i>	Combretaceae	Rangoon creeper	Climber

26	<i>Bougainvillea spectabilis</i>	Nyctaginaceae	Bougainvillea	Climber
27	<i>Rosa chinensis</i>	Rosaceae	Rose	Shrub
28	<i>Ipomoea digitata</i>	Convolvulaceae	Ipomoea/Milky Yam	Climber
29	<i>Tinospora cordifolia</i>	Menispermaceae	Guduchi/Gudvel/Amruta	Climber
30	<i>Alpinia galanga</i>	Zingiberaceae	Galanga/Vekhand/Kulanjan	Runner
31	<i>Nelumbo nucifera</i>	Nelumbonaceae	Lotus	Hydrophyte
32	<i>Hydrilla verticillata</i>	Hydrocharitaceae	Hydrilla	Hydrophyte
33	<i>Murrayaloenigii</i>	Rutaceae	Karipatta	Shrub
34	<i>Aegle marmelos</i>	Rutaceae	Wood Apple/Kawat	Tree
35	<i>Rauvolfiatetraphylla</i>	Apocyanaceae	Sarpgandha/wild snake root	Shrub
36	<i>Plumeria alba</i>	Apocyanaceae	Champa	Tree
37	<i>Plumeria pudica</i>	Apocyanaceae	Nagchampa	Shrub
38	<i>Agave tequilana</i>	Asparagaceae	Agave	Xerophyte
39	<i>Clitoriaternacea</i>	Fabaceae (Papilionaceae)	Gokarni	Climber
40	<i>Abrusprcatorius</i>	Fabaceae (Papilionaceae)	Gunj	Climber
41	<i>Agave angustifolia</i>	Asparagaceae	Agave	Xerophyte
42	<i>Durantaerecta</i>	Verbenaceae	Golden Duranta	Shrub
43	<i>Asparagus racemosus</i>	Asparagaceae	Asparagus	Climber
44	<i>Capparis zeylanica</i>	Capparaceae	Capparis	Climber
45	<i>Musa paradisiaca</i>	Musaceae	Banana	Shrub

46	<i>Rosa sp.</i>	<i>Rosaceae</i>	<i>Rose</i>	<i>Shrub</i>
47	<i>Jatropha podagrica</i>	<i>Euphorbiaceae</i>	<i>Jatropha</i>	<i>Shrub</i>



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