CHAPTER 3

EXPERIMENTATION
3.1 Introduction to Experiments

Every human being experiences his surroundings using his five senses. As he does not have more than five senses, his comfort and discomfort lie within the satisfaction of those five senses. If he profusely perspires, the reason is that he experiences the heat and his skin liberates lot of sweat to cool it down. If he profusely suffocates, the reason is that he experiences the gasping of non-oxygen air and hence he requires to inhale oxygen to attain his comfort. So, a human body is designed with five corporeal senses to connect to the external atmosphere. Making a man to comfort himself in these five senses will make the process to attain the Satisfaction Factor of that man.

Every human being is having the following five senses: Seeing, Smelling, Tasting, Hearing and Touching.

This research is carried out in the hospital premises for obtaining the Satisfaction Factor of the users with respect to the above five senses. Giving the comfort zone for these five senses of the users in the hospital premises will enable a healthy, comfortable and contented ambiance for hospitals.

Every premises will have to have two spaces: External open space and internal built-up space. Hence, there are two experiments carried out for finding out the best suitable environment for both these spaces of hospital premises. Experiment no.1 focuses on the external landscaping of hospitals while Experiment no.2 on the internal landscaping. As it is stated in the limitations, these two experiments are made sure to concentrate towards only one feature of landscaping, i.e., Vegetation.

Both these experiments are bordered to target on obtaining the “Satisfaction Factor” of the users in the hospital premises in both external and internal spaces, using the vegetation such as trees, plants, shrubs, creepers and groundcovers. These two experiments are not conducted for the other elements such as water, soil, rocks, etc., just for the reason to narrow down the research into one specific feature.

Hence, the following two experiments are to be executed with respect to the vegetation of the hospital premises targeting the comfort zone of the users with “Satisfaction Factor” as a scale.
3.2 Experiment No.1 – SURVEY IN HOSPITALS

3.2.1 Introduction to Experiment No.1

The first experiment is targeted towards the survey to be conducted in the above 3 case studies to find out the Satisfaction Factor of users, through which the area calculation for the footprint, open space and also the built-up space shall be achieved. However, this area calculation will be purely depending on the survey and the people’s satisfaction level.

3.2.2 The Need and Justification of Survey

The aim of the first experiment is to find out the optimum area of vegetation (X) with respect to the area of the total open space (Y) in hospital premises. So, this experiment will contribute the result in the form of ratio (X : Y) which can be defined as the ratio of optimum area of vegetation to the area of the open space in the hospital premises. This result may yield the design guidelines for framing the suitable external landscaping for hospital premises.

A hospital premises shall be fragmented into four important major divisions:

1. Built-up space, 2. Only-vegetation-open space (X), 3. Open space with no vegetation, and
4. The total open space (Y)

This experiment (first experiment) focuses on finding out the ratio between X and Y for the reason of finding out the amount of vegetation needed for a given area of total open space. This first experiment will offer the future scopes by concentrating on any other parameters from the above four divisions and the research shall be carried out in future to find out the ratio between any two above parameters for the hospital premises. Here, X and Y are taken for sample research.

There could be so many possible experiments to achieve the above target. But, the reason for the selection of doing “Survey” with the users in the hospital premises is as follows: The vegetation in the external space is in open atmosphere and is impossible / very tough to measure the parameters from the vegetation, such as oxygen liberation, humidity control, etc. Secondly, unlike the size of internal vegetation, the external vegetation vary from huge trees to small herbs. The accurate measurement of such huge trees in terms of air purifications, dehumidification etc., will be very tough or immeasurable as they are merging with the
atmosphere / open space and not in a closed room. So, this inability of unbound vegetation lets the way to find the comfort zone of the people using other possibility which could be “Survey”, which may help / support to find out the Satisfaction Factor of the users.

The milieu of the hospitals ought to be healthy and hygienic for the patients to recuperate from their illness. The role of trees and plants in a hospital premises is considered a dynamic parameter of creating up the hospital quality. This experiment attempts to discern the ratio of minimum land / area required for the medicinal landscape to the area of total open space. The very question how to border out the minimum quantity of trees required for a hospital landscape is the prime aim of this experiment. Secondly, what are the aspects (air purification, killing bacteria, noise reduction, etc.) to be considered in selection of trees, is the next level of this experiment. Finally, aiding with the statistical results of a survey to be conducted in hospitals, this experiment will narrow down to the ratio (x:y) for a typical hospital premises, where ‘x’ is the minimum area required for the vegetation for ‘n’ number of users (patients, non-patients, hospital-staff, etc.) and ‘y’ is the minimum open space required for the medicinal landscape to be executed for a Healthy Hospital.

3.2.3 Methodology of the Survey

“Survey” with the users in the hospital premises will help the research to find out the Satisfaction (comfort) level of the users in the hospitals, which will further enable to measure the amount of vegetation and the amount of open space which gave the satisfaction level for the users. This measurement will aid this survey to destine to the ratio of the optimum vegetation to the optimum open space in a hospital premises, which will give the Satisfaction Factor of the user.

By doing the survey, it would be possible to find out the satisfaction level of the users. By finding out the satisfaction level, it would be possible to find out the vegetation (X) which gave that satisfaction level. Hence, the survey may lead to the successful accomplishment of the first experiment.

The methodology of framing the survey is done by creating a questionnaire (interview) for the users. This questionnaire is to be mainly concentrated on the external spaces and the experiences of the users in the external spaces. However, to understand the experiences of users in internal spaces as well, a set of questions are also included which might help in supporting the experiment no.2 which is purely for internal landscaping.
3.2.4 Questionnaire of the Survey (Table 3.1)

SURVEY IN HOSPITAL LANDSCAPING
WITH RESPECT TO MEDICAL TREATMENT

A. Personal Information
B. Survey w.r.t. Site Planning
C. Survey w.r.t. Building Planning
D. Post – hospital Experience
E. Survey about the Trees

A. PERSONAL INFORMATION:

1. Name:
2. Age:
3. Gender:
4. Occupation:
5. Nativity:
6. State:
7. Health Info:
   - Nature of disease?
   - How often suffer?
   - Family disease?

B. SURVEY W.R.T. SITE PLANNING:

1. Which part of this hospital you like very much?
2. How long you have been here?
3. Where, do you feel, in this premises livable & comfortable?
4. Is walking inside the site easy for you?

5. Where will you rest / sit in the premises?
6. Imagine this premises without trees
   a. Horrible
   b. Adjustable
   c. No difference
7. What is the aesthetic level of existing trees?
   a. Eye pleasing
   b. Ordinary
   c. No difference
8. Where is the maximum noise level in the premises?
9. Where in this premises is more smoke? Dust?
10. Do you experience problems due to the medicinal / other smells?
    a. Yes
    b. No
    If yes, Where in the premises?
    a. Inside
    b. Outside
11. Have you visited all parts of the hospital premises?
    a. Yes
    b. No
12. In known area, how much percentage the vegetation covers?
    (to be filled by me)
13. Are you comfortable staying in the premises?
    a. Yes
    b. No
14. Do you want some more trees to be here?
    a. Yes
    b. No
| 15. | Do you experience the problems of insects? | a.yes b.no |
| 16. | If yes, where? | |
| 17. | Which one do you prefer? PAVED / CONCRETE / EARTH / LAWN | |
|  | A. While walking | |
|  | B. While resting | |
|  | C. While roaming under the tree | |
|  | D. While parking the vehicles | |
| 18. | Do you think any element is missing in the open space of this hospital? | |
| 19. | Which is the part you spent maximum time in this premises? | |
| 20. | Do you experience any problem in noise level? | a.yes b.no |
| 21. | Do you hear the traffic noise from the main road, standing here? (I have to mark the location of this survey point) | a.yes b.no |

**C. SURVEY W.R.T. BUILDING PLANNING:**

| 1 | Do you comfortably breathe and relax here? | a.yes b.no |
| 2 | Do you smell the medicinal stinks here? | a.yes b.no |
| 3 | If yes, Does it irritate you? | a.yes b.no |
| 4 | If yes, what would you do regarding that? | a. Nothing b. Go to open space c. Spend time under tree d. Others (Specify) |
| 5 | Do you feel comfortable to walk around? | a.yes b.no |
| 6 | If yes, where more comfortable? | a. Corridor b. Staircase c. In ur room d. Others (Specify) |
| 7 | If no, where do you feel discomfort in moving around? | (Specify) |
| 8 | Can you point out what makes you discomfort there? | a. Breathing b. Temperature c. Cleanliness d. Others (Specify) |
| 9 | Can you try to suggest an option for the above mentioned discomfort? | a. Airconditioning b. Plants c. Air-freshener d. Others (Specify) |
D. POST HOSPITAL EXPERIENCE:

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How many times you’ve come here?</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Did you get fever after visiting here?</td>
<td>a. yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. no</td>
</tr>
<tr>
<td>3</td>
<td>Which part of the premises, you remembered after the hospital visit?</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Inside the building, outside the building, where did you feel more relaxed, over-all?</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Close your eyes. What do you think was the pleasurable moment in the hospital in spite of your disease?</td>
<td></td>
</tr>
</tbody>
</table>

E. SURVEY ABOUT THE TREES:

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Which tree you liked very much?</td>
<td>a. shedding leaves</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Smell/Odour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Color</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Insects</td>
</tr>
<tr>
<td>2</td>
<td>Which tree was aesthetic in this premises?</td>
<td>a. Smell</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Color</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. appearance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Shade</td>
</tr>
<tr>
<td>3</td>
<td>Which tree you will recommend, could be planted inside the premises?</td>
<td>a. Others</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(specify)</td>
</tr>
</tbody>
</table>

THANK YOU FOR YOUR PATIENCE...!
3.2.5 Sample Test

Finalizing to three numbers of hospitals:

It was decided to do survey in three hospitals. This experiment could have been carried out with ‘n’ number of hospitals. The final result will give the average of those ‘n’ numbers. It could have been five or ten or twenty number of hospitals for this survey. The final ratio will be the average of those five or ten or twenty surveys conducted in those hospitals. But, two number of hospitals will be very small in terms of precision and accuracy.

So, it is finalized to three numbers of hospitals for survey. Again, for future scope of this research, it can be taken and done with any other ‘n’ of hospitals. Hence, for this first experiment, the three hospitals which were case studied are selected for the survey.

Period of Survey:

It was further decided to conduct the survey in three sessions in each hospital: Morning, Mid-day and Evening. This categorization will enable this first experiment to narrow down the research in analyzing the survey with respect to the mentality of the users according to the “Period of the daytime”. Hence, morning session was scheduled from 6 a.m. to 10 a.m., the mid-day session was scheduled from 11 a.m. to 2 p.m. and the evening session was scheduled from 4 p.m. to 8 p.m.

Finalizing the number of users per hospital:

Generally in a hospital, the users can be divided into two major categories: 1. Patients and 2. Non-patients. The above two major categories can be further divided with respect to the gender, in the following ways: 1. Male-patients, 2. Female-patients, 3. Male-non-patients and 4. Female-non-patients.

Again this can be subdivided as per the age. Age wise division is done as follows:

1. Age below 10
2. Age between 10 – 20
3. Age between 20 – 35
4. Age between 35 – 55
5. Above 55
Trying to fix this age division to the users, it is categorized as follows:

1. Male – patient (Age below 10)
2. Male – patient (Age between 10 – 20)
3. Male – patient (Age between 20 – 35)
4. Male – patient (Age between 35 – 55)
5. Male – patient (Age above 55)

6. Female – patient (Age below 10)
7. Female – patient (Age between 10 – 20)
8. Female – patient (Age between 20 – 35)
9. Female – patient (Age between 35 – 55)
10. Female – patient (Age above 55)

11. Male – non-patient (Age below 10)
12. Male – non-patient (Age between 10 – 20)
13. Male – non-patient (Age between 20 – 35)
14. Male – non-patient (Age between 35 – 55)
15. Male – patient (Age above 55)

16. Female – non-patient (Age below 10)
17. Female – non-patient (Age between 10 – 20)
18. Female – non-patient (Age between 20 – 35)
19. Female – non-patient (Age between 35 – 55)
20. Female – non-patient (Age above 55)

Hence, the user category is framed as the above 20 divisions. It is decided to take at least two people from every division and thus 40 people are selected for survey. Again the survey is planned to conduct in three session – Morning, midday and evening.

Therefore, the overall number of users needed for one day in a single hospital is 120 users (40 X 3 sessions). Hence it is finalized to conduct survey with 120 users per hospital.
3.2.6 Test Results and Inferences of Experiment No. 1:

Post – Survey Works: After the survey is carried out in all the three hospitals, the next three levels of scrutinizing the research are: 1. Observations, 2. Syntheses and 3. Formulation of Design guidelines. These three processes will be explained in the following chapters. After such scrutiny of the survey, the conclusion is given forth with the calculation of the area of the vegetation and the total open space in average of these three hospitals; therefore the possible result may be obtained in the form of ratio X : Y.

3.3 Experiment No.2 – LABORATORY TESTS

3.3.1 Introduction to Experiment No.2

As it is already stated that the two experiments are outlined for the external and internal landscaping of the hospital premises, the Experiment No. 2 focuses on the internal landscaping. Internal landscaping is totally different from the external one, the prime reason being the latter is in the open space and the former is in the confined space (closed space). So, the satisfaction factor for the first experiment was measured using the survey conducted with the users of the hospital, as the vegetation’s characteristics would be tough or impossible to measure, whereas, for the second experiment, measuring the internal vegetation’s characteristics could be possible.

As mentioned in the introduction of the experiments, every human being contacts his surrounding environment through his five senses – seeing, smelling, tasting, touching and hearing. It is also mentioned that these two experiments are framed in such a way that the vegetation in the external and internal spaces is measured to attain the Satisfaction factor of the human being with respect to those five senses. Those five senses of the human being is measured as the five aspects in the vegetation of internal spaces.

Those five aspects are considered as – visual comfort (seeing), deoxidization (smelling), aromatic quality (tasting), dehumidification (touching) and sound absorbent (hearing).

The aim of the experiment No.2 is to find out the amount of indoor plants required for the required volume of the room.
Objectives of this experiment No.2:

1. To find out the quantity of the above 5 aspects from a fixed quantity of vegetation.
2. To finalize the ratio between the volume of the vegetation and the volume of the result (with respect to the 5 aspects).
3. To conclude with the ratio (X:Y) between the overall volume of the required vegetation (X) to the volume of the room (internal space) (Y).
4. To study and enlist the plants required for the interior landscaping.

3.3.2 Need and Justification of Laboratory Tests:

The internal landscaping is comprised of the vegetation which would be, in general, smaller in size and lesser in volume, comparing to the vegetation of external landscaping. That will be easier in terms of handling the internal vegetation for the experimental purposes.

Unlike the experiment no.1 in which survey was opted for measuring the Satisfaction Factor, the experiment no. 2 shall be framed in order to measure all the required characteristics of the vegetation in a precise manner.

Such characteristics are: Sound absorbent (ears), Visual comfort (eyes), Deoxidization (nose), Dehumidification (Skin) and Aromatic quality (tongue). So, measuring all the above characteristics shall be done in Botanical Laboratories with experimental tests.

Through these experimental tests in laboratories, the measurements / readings for the above five characteristics (according to five senses of human being) shall be obtained as the results, which shall further aid in calculating the number of species required for certain volume of a room (internal space).

Further, these results from the laboratory tests may help to compare the results of the experiment no. 1 (Survey) to analyze if the satisfaction factor obtained in the survey is equal to the satisfaction factor of the laboratory tests.
3.3.3 Methodology of the Laboratory Tests:

After a comparative analysis of 100 species selected from various researches, the 25 indoor species are finalized with maximum benefits observed through those researches. The 25 selected plants are tested in the laboratory to find out the quantitative results for the following parameters:

1. Hearing – Sound absorbent  
2. Seeing – Visual comfort (Foliage density)  
3. Smelling – Deoxidization (Air purification)  
4. Feeling – Dehumidification (Humidity control)  
5. Tasting – Aromatic quality

- Instruments used for Hearing test: Tuning Fork & Decibel meter  
- Instruments used for Seeing test: Plants & People  
- Instruments used for smelling test: Oxygen meter, Plastic cover.  
- Instruments used for Feeling test: Hygrometer, plastic cover.  
- Instruments used for Tasting test: Plants, people

3.3.4 Selection of Vegetation / Justification in selection:

As mentioned above 25 species are selected from the detailed scrutiny of various researches. Those 25 species are taken and considered for the laboratory tests – Experiment No. 2.

The following are those 25 selected species for the tests:

1. Aglaonema (Pewter plant)  
2. Radermachera sinica (Serpant plant)  
3. Soleirolia helxine (baby’s tears)  
4. Ficus maclellandii (Banana leaf fig)  
5. Ficus lyrata (Fiddle leaf fig)  
6. Chamaedorea cataractarum (Cat palm)  
7. Ficus benjamina (Weeping fig)  
8. Dracaena reflexa (Song of India)
9. Crassula ovate (Jade plant)
10. Ficus elastic (Rubber bush)
11. Strelitzia reginae (Bird of paradise)
12. Dieffenbachia (Dumb cane)
13. Dracaena Janet Craig (Angel Plant)
14. Aeschynanthus (Lipstick plant)
15. Spathiphyllum (White sails)
16. Asplenium nidus (Wet fern)
17. Phoenix roebilini (Pygmy Date palm)
18. Chamadorea elegans (Parlor palm)
19. Euphorbia milii (Christ thorn)
20. Sansevieria trifasciata (Snake plant)
21. Stephanotis floribunda (Long jasmine)
22. Polyscias fruticosa (Snow flake)
23. Hibiscus trionum (Bladder ketmia)
24. Jasminum polyanthum (Jasmine plant)
25. Cymbidium orchidaceae (Boat orchid)

These plants are selected for the experiment no.2 and the further steps are taken before conducting the laboratory tests.

### 3.3.5 Sample Test

The five tests on the selected 25 plant species, with respect to the human senses are carried out as per the following description:

1. **Hearing test:**
   
a) Sound absorbing quality of a plant is measured as follows: The selected plant species is taken to the laboratory and tested for its ability of being sound absorbent. So, it is decided to use the instruments such as tuning fork and the decibel meter.

   b) Firstly, the tuning fork and the decibel meter are kept at a distance of one meter apart. With that distance as a gap, the tuning fork is tuned up to vibrate and the sound is measured in the decibel meter.
c) Secondly, after this measurement of the sound of tuning fork, the foliage of plant species is kept in between the tuning fork and decibel meter (exactly at 0.50 meter from each) and the tuning fork is tuned to receive its sound to the decibel meter when the species acts as a sound absorbent in between the tuning fork and the decibel meter.

d) The difference between the first measurement and the second one will give the sound absorbing quality of that species. Similarly, it is decided to conduct the test for all the above selected species and to enlist them in the hierarchy of the best to the worst in terms of ‘sound absorbance’.

2. Seeing test:

   a) Visual comfort quality of a plant is measured as follows: The selected plant species is taken to the laboratory and tested for its ability of providing visual comfort to the users. So, the users of different types such as elderly, younger, sick, fractured, etc. are selected and asked to sit in front of the selected plants with a distance of one meter.

   b) The users were asked to continuously see the foliage of the plants for 300 seconds (five minutes) in a single stretch. Then, the visual comfort was inquired and thus, the visual comfort quality of the species is sorted out.

   c) Similarly, it is decided to conduct the test for the rest 24 species and to enlist them in the hierarchy of the best to the worst in terms of ‘visual comfort’.

3. Smelling test:

   a) The quality of deoxidization of a plant is measured as follows: The selected plant species of one kilogram in weight is taken and covered with a plastic cover air tight. The instrument ‘Oxygen meter’ which is helpful for measuring the quantity of the oxygen, is attached within the covered species.

   b) This set up is maintained for one hour. The readings of before and after the apparatus set up are noted down. The final reading of the oxygen meter after one hour is taken as the recorded result. So, if a species of one kilogram of volume liberates the oxygen of “$X$” quantity in one hour duration of time, it could be
possible to manipulate it to the required volume of the interior space for the required amount of oxygen.

4. Feeling test:
   a) The quality of dehumidification is considered as the feeling test and the reason is as follows: The skin has the characteristics of sweating. The temperature and the humidity are the main factors for perspiration. Hence, “the relative humidity of a plant” (dehumidification quality) is considered as the feeling test.
   b) The test is conducted as follows: Just as in Smelling test, the plant species is covered with a plastic cover with the Hygrometer attached with it and the readings are noted for the next one hour.
   c) Thus, if a species of one kilogram of volume gives “X” percentage of Relative Humidity (RH) in one hour, it would be possible to manipulate it to the required percentage of RH in the closed space. Thus, this test enables the plant species to act as “Humidity controller”.

5. Tasting test:
   a) Taste is always related with the aroma. Just the smell of food from the kitchen will induce the taste in the salivary gland. With this concept taken, ‘Aromatic quality’ of a plant species is considered as the test for ‘Tasting’.
   b) This test is conducted as follows: The selected plant species is kept in the space of one cubic metre and the smell of it observed by human nose. After one hour, the observation is marked again.
   c) Likewise, the observations are marked for five hours. Hence, the aromatic quality of the plant species is measured and enlisted according to the hierarchy of the best to the worst in terms of ‘Aromatic quality’.
3.3.6 Test Results and Inferences of the Experiment No. 2:

All the above five laboratory tests are conducted to attain the ratio (X:Y) which is the ratio between the volume of the vegetation to the volume of internal space.

In every test, (hearing, seeing, smelling, feeling and tasting), the results are obtained from the 25 species and the ratio is calculated.

Every sense will give a specific ratio for the internal landscaping. So, this experiment will result with five numbers of ratios. If those ratios are averaged, that will be the resultant ratio for the experiment no. 2 which will say the quantity of vegetation needed for the required volume of internal space (room).

3.4 Uses of the above two experiments for this research:

The aim of the research is to find the appropriate Landscape Design Solution to create ambience helpful as an aid to Medical Treatment in Hospitals. The above two experiments are framed in such a way to attain the aim of this research in every part of the hospital premises.

Any hospital premises shall be zoned into the divisions such as: 1. Building (Built up space), 2. Total open space, 3. Open space with only vegetation, 4. Open space with bare ground (without vegetation) 5. Volume of the space within the room and 6. Volume of vegetation within the room.

The landscape solution is given concentrating on the “Vegetation” of the premises. Hence, the conclusion of the research shall be given by providing the appropriate ratio of any two zones among the six divisions mentioned above.

Here in this thesis, ‘the ratio between the total open space and the open space with the vegetation’ – is concentrated for the external landscaping of the hospital premises; and ‘the ratio between the volume of the room and the volume of the vegetation required within the room’ – is concentrated for the internal landscaping. The former ratio is attempted by the experiment no. 1 and the latter ratio is attempted by the experiment no.2.

Likewise, in future scope of this research, any other two divisions of the hospital premises shall be experimented to get the ratio among them. Further, the scope can be prolonged to research with any three divisions of the hospital premises to get the ratio between those three parameters. For
example, let the three divisions be: 1. Total Built up space of the hospital premises, 2. Total open space of the hospital premises and 3. Open space with only vegetation. So, the final ratio shall be in the form of X:Y:Z, in which X denotes the total built up space, Y denotes the total open space and Z denotes the open space with only vegetation. In such research, the result will enable to give the optimum open space for vegetation (Z) for the quantity of given built up space and total open space of the premises.

The following are the best uses of the above two experiments for this research:

1. Experiment No.1 which is done on the basis of survey will give the overall opinion of the users who undergo the ambiance.
   a. As the design is “for the people”, the survey enhances the research in a crisp way of giving the solution.
   b. As one of the objectives is to attain the range of comfort zone for all the five senses of the human being, the survey questionnaire helps to narrow down accordingly.
   c. By and large, the interviews with the users give the average result of the Satisfaction Factor.
   d. When the positive result is obtained, the trees around the area are considered the best in giving such positive solution.
   e. When the negative result is obtained, the trees which made the users get discomfort are considered to be eliminated from the Satisfaction Factor list.
   f. Thus, the name, size, age and location of the species are noted down which will help the research to obtain the final ratio with all its scrutiny.

2. Experiment No.2 which is done in the laboratory will give the exact results for the five senses using the vegetation.
   a. These five laboratory tests help to get the results with respect to the five senses of human being within the range of comfort zone.
   b. Those results are further to undergo the syntheses and hence will aid it to conclude with the ratio of required volume of vegetation to the volume of the given internal space.
   c. These laboratory tests will further help to result in finalizing the list of vegetation for internal space.