# DEVELOPMENT OF KITCHEN GARDEN DESIGNS FOR THE RESIDENCES OF VADODARA CITY

## SYNOPSIS


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# INTRODUCTION

India faces a truly formidable challenge in managing the rapid process of urbanization and the growth of its cities (Ballaney, 2008). Due to rapid rise in migration to cities from rural areas, there is an increasing pressure on land as a resource. As population increases, more land is required for providing the basic human needs like food and shelter. Everything around us is changing at a faster rate than we can predict. India is a part of the world that is evolving. What remain constant is the human soul and our own social perceptions. Handling urban garbage is a big issue that is given little attention. Previously, when the population was small, needs were few, and resources were plentiful, garbage was primarily biodegradable and spontaneously recycled. In the natural sinks of the atmosphere, land, streams, oceans, and soil, nature has proved its ability to disseminate, degrade, absorb, or otherwise dispose of undesired leftovers. These served the public by transporting everything we didn't want to places where we didn't care what it did. However, as the world's population grew, urbanisation and industrialization grew, the consequent massive amount of garbage, of all types, grew beyond nature's capabilities, posing a serious dilemma. As a result, rising waste levels are concerning. This necessitates efforts such as reducing waste generation to lessen the negative consequences and challenges associated with solid waste disposal, and disposing waste in a way that allows for resource recovery through recycling (Patel, 1999). Major waste generation at household level is bio-degradable waste, which can be minimised by taking proper measures. One such measure is preparing homemade compost prepared from the bio-degradable waste generated in the kitchen or garden. The homemade prepared compost is a great substitute for the chemical fertiliser available in the market. Homemade compost can be the great option for growing healthy and nutritious organic vegetables and fruits in one's own kitchen garden. In the kitchen garden, one can grow organic vegetables for family's consumption. By growing organic vegetables and fruits by using homemade compost prepared from kitchen waste at home, one can benefit the environment. Now-a-days people have started incorporating kitchen garden in their house in places such as; terrace, balcony, window sill or containers even if the land is not available. The kitchen garden provides the fresh, healthy and nutritious vegetables for family.

## Kitchen Garden

Importance of gardens has greatly increased now-a-days as it presents many advantages. It improves human health and adds to natural environment. It helps in improving quality of life

by providing opportunities for refreshment, relaxation, and recreation. Some gardens are developed for aesthetic purposes, while some gardens also produce food crops, sometimes in separate areas, or sometimes intermixed with both. In a home, garden developed to provide food crops and other consumable flora, are known as kitchen garden. The vegetables and fruits are the basic necessity of daily routine and the hike in price of the vegetables and fruits affect the purchase of the same. Fixed income group families have to suffer from the decreasing real incomes and purchasing power. The need of an hour is to gain access to increase the nutritious value of the food at present. Now a day's people have started incorporating kitchen garden in the modern houses for growing fresh and nutritious chemical free food crops. (Rehman, et.al., 2013)

> According to Merriam-Webster dictionary, "Kitchen garden is a garden in which plants (such as vegetables or herbs) for use in the kitchen are cultivated."

According to Vaishali, 2020, for a healthy living, it is essential to have a healthy diet. A healthy diet includes a good and adequate and balanced mix of rice, pulses, cereals, vegetables, fruits and herbs. Vegetables play an important role in fighting against the disease and providing enough energy and immunity to stay healthy. By growing vegetables at home without any chemical inputs are beneficial for healthy body. Kitchen gardening is the inexpensive and does not require lot of space as one can use their balcony or window sill also for growing vegetables (Vaishali, 2020).

Vaishali, 2020 has suggested some need of the kitchen garden in present times, such as; to grow the healthy and fresh vegetables all around the year, one can control the pests and diseases by cultivation in small areas in the kitchen garden by removing the affected parts, this can allow one to successfully grow the required amount of vegetables in their own kitchen garden, this will also cut down the cost of buying fruits and vegetables from market, kitchen waste, sweeping waste and waste water can be used in the kitchen garden itself, thus providing easy recycling, home grown vegetables are more nutritious and tasty, compared to market bought vegetables, as they are free from chemicals and pesticides.

There are innumerable reasons to develop kitchen garden. With a little land, a few seeds and tools, and some fertilizer, anyone willing to put in the time and effort can grow a wide variety of delicious and nutritious vegetables and fruit. Growing the vegetables can cost significantly less than buying them and the food one grows may be more nutritious than equivalent produce purchased at grocery stores. We live in an age in which food marketing is all about

cholesterol, fiber, and fat. Gardening helps to turn away from this absurdity and return to the idea of eating whole, nutritious, delicious food, as opposed to whatever "nutrients" the latest scientists, marketers, and journalists have suggested might be best for our health. Similarly, in an era in which many people are almost completely sedentary or go to great lengths to "exercise", gardening is a form of activity that has a useful end product. For those overwhelmed by the pace of modern life, gardening can provide a focused, mindful break from constant noise and rush. For others, the feeling of stewardship of a piece of land, of soil and plants, is important. For those with children, gardening can be an excellent way to introduce children to the natural world and to food production and preparation. Finally, many just plain find it enjoyable. (Mittenthal, 2007) Kitchen gardens can be grown in the empty space available at the backyard of the house or a group of women can come together, identify a common place or land and grow desired vegetables, fruits, cereals etc. that can benefit the women and community as a whole (Christensen, 2011).

Problems related to Kitchen Garden

In present times, people are more sensitized regarding the benefits of a kitchen garden and therefore, several homeowners develop it in their homes. It is designed professionally by landscape experts or self-developed by the homeowners. They build kitchen garden irrespective of availability of space, expenditure incurred in creating and maintaining one as well as their lack of knowledge regarding the same. In such cases, it is apparent that homeowners may face problems in developing, utilizing and maintaining their kitchen gardens. When one thinks about kitchen gardening, kitchen gardening seems simple enough. Get some seeds and saplings, as well as pots and a bag of garden soil from the nursery, then fill the pots with soil, spread the seeds or plant the saplings, and place them on the balcony or windowsills. All just have to do now is water them and reap the benefits of the labour. But, as a beginner, the fruit may never appear, or the seed may never sprout at all. When one first began planting plants, they encountered same challenges. The key is to identify the problem before attempting to solve it (https://hometriangle.com/articles/669/kitchen-gardening-challenges). People who already have developed kitchen garden facing different problems related to their kitchen garden; such as, related to soil, drainage, amount of sunlight, pests, seedlings, plants, fruits, etc. All these problems also need to be addressed while developing a kitchen garden. One need to identify the issues that occurs during the development or maintaining the kitchen garden. Thus, it is necessary to study these problems and the extent to which these problems are affecting the homeowners.

**Homemade Compost**

The best way to reduce the consumption of pesticides in fruits and vegetables is growing them at home with the household compost. Growing organic crops at home helps to maintain the nutritional health of the family. Kitchen garden helps the owner to eat organic fruits and vegetables at home without spending much at the market to buy them. To grow organic crops at home, it is important to avoid using the pesticides in kitchen garden. It's always better to prepare the compost at home with the help of the bio-degradable waste generated in the kitchen. For preparing the compost at home, the waste generated at home should be segregated in bio-degradable waste which can decompose. Composting the kitchen waste materials saves the money of the house owner as well as the municipality. By using the kitchen waste to make compost at one's own home, one can save the cost of buying compost and fertilizers to improve the kitchen garden. By using such kitchen and garden waste to create the compost we can save up-to lot of landfill space. Composting also help the soil to increase the number and type of microbes in the soil and will help plants to obtain nutrients and maintain the balance among microbes to help limit the number of disease causing organisms. (Resources, 2017)

Compost is best for improving the texture of the soil, so that it can hold the water and air for the betterment of the plants. For healthy root development in the plants the compost is good as it adds nutrients to the soil. The benefits of composting are free fertilizer, no harmful chemicals, less waste and a cleaner planet. Any kind of kitchen waste which includes the vegetable and fruit scrapes can go into the compost pile. Even actual plants and its parts also can be used in the compost pile; such as paper, sawdust, dryer lint if it's made from natural fibre. Two to three parts of "brown materials" and one part of "green materials" can be added to make the best compost. (Livingston, 2021) Types of composting depends on the several factors like; the availability of space, amount of organic waste generated, type of organic waste generated (kitchen waste or garden waste) and the composting process time. There are basically three types of composting; i.e., cold composting, hot composting and vermicomposting. (https://www.agrifarming.in/how-to-make-compost-at-home-step-by-step-guide, 2021)

Homemade compost is healthy and chemical free option for kitchen garden. The existing kitchen garden owner should have a good knowledge about the preparation and use of the homemade compost in their kitchen garden. One needs to have a good knowledge about

various aspects of homemade compost, such as; benefits, materials, types and preparation process. Without having proper knowledge of the process, one cannot prepare good compost. Thus, it becomes important to enhance the knowledge of the respondents regarding the different aspects of homemade composting. Foremost important to assess the problems and provide solution related to kitchen garden. Thus, a researcher felt a need to design kitchen garden design for various spaces of a residence, which will address the issues related to kitchen gardening and homemade compost.

**Kitchen Garden Designs**

It's natural that kitchen gardens and the grow-your-own movement have witnessed a recent revival. Growing fruit and vegetables takes time and effort, but the efforts will be rewarded with the freshest and tastiest products to eat right out of the ground. Growing vegetables and fruits in the house requires a good knowledge about the plants and their placements. Kitchen garden can be designed in a land; if available, balcony, terrace or container. According to the availability of the space available at home, one can design a kitchen garden. The design of kitchen garden varies as per the space. Even in small house, where there is no spaces to develop a kitchen garden, one can always grow vegetables in containers, which can be placed on window sill or in the balconies. Thus, the researcher felt a need to develop various designs for land, balcony, terrace and container kitchen garden, which would be useful for the users to develop their kitchen garden in their residence.

**JUSTIFICATION**

Rapid urbanisation and industrialization are responsible for increase in pollution at all the levels viz.; land, air and water pollution. The factories and mills are depositing their waste into the river and ponds, which is polluting the water. The land is polluted with a lot of solid waste deposited at landfill and on the streets as well. This factories and mills are adding lots of bad gases to the air which contains lots of harmful chemicals, which creates air pollution. One of the land wastes is the household waste. Every year tons of household waste ends up in the landfill. This household waste contains lots of biodegradable waste; which can be segregated at household level and can be utilised to create homemade compost. The kitchen waste generated at home can be used to create homemade compost which can be used in the kitchen garden itself. Due to excessive pollution the vegetables and fruits available in the market are full of harmful chemical and pesticides which leads to deadly diseases. Thus, option is kitchen garden to grow vegetables and fruits in their own residence. The fruits and

vegetables grown in one's own kitchen garden can be chemical free and nutritious and can be grown with the use of homemade compost. In a kitchen garden, one can grow different variety of vegetables and fruits throughout the year. But many a time, problems are experienced by homemakers related to various aspects in kitchen gardening. The problems related to sunlight, soil, drainage, pests, etc. are to be assessed before developing kitchen garden designs. Thus, the researcher gathered the information regarding the problems experienced by the homemakers regarding their existing kitchen garden. Researcher also gathered data related to the knowledge of the homemakers related to homemade compost, which is helpful for management of solid bio-degradable household kitchen waste.

The researcher came across many studies related to compost and gardening but a dearth of researches was found focusing on developing kitchen garden designs or methods showing the preparation of homemade compost. This made the researcher interested in this little explored area regarding kitchen garden which was not studied under the umbrella of Family and Community Sciences (Home Science). It is need of an hour to train the homemakers to develop the kitchen garden with best suitable plants according to their available space.

Thus, the major focus of the study was to develop kitchen garden designs for various spaces in residence. Researchers also studied the problems experienced by the homemakers regarding their existing kitchen garden and to enhance their knowledge regarding different methods of homemade composting and its use in their own kitchen garden. The researcher had targeted the respondents who had kitchen garden but were facing problems maintaining their kitchen garden. Researcher also developed a booklet on "Developing a Kitchen Garden in Residences", which covered all the aspects of kitchen gardening. The booklet contained the problems related to kitchen garden and their solutions, methods and techniques of homemade compost and kitchen garden designs for various spaces of the residence. Also, the intervention program focused on the problems related to kitchen garden and ways to solve them had planned. The intervention program focused on enhancing their knowledge regarding the benefits of composting, types of composting and preparation and use of composting in their kitchen garden. The intervention program also included various designs of kitchen garden and how they can incorporate those designs in their residence. The intervention program can upgrade the knowledge of the homemakers regarding various aspects of the kitchen garden and motivates them to develop their own kitchen garden in their residence. Thus, the researcher felt motivated to take up this research and motivate the homemakers to develop their own kitchen garden.

The study will be beneficial to the students of Family and Community Resource Management, Interior Designing students, Architecture Students and Landscape Designers. The findings of the study will broaden the curriculum aspects for courses such as Landscaping and Gardening, Residential and commercial Space Designing, and Environment and Ecology of the field of Home Management/ Family Resource Management/ Family and Community Resource Management. The findings of the study will broaden the horizon of kitchen gardening and various kitchen garden designs developed will be useful for those working in the landscape and gardening area and those who are interested in creating their own garden by themselves.

The study will be beneficial to those who want to have the kitchen garden, but have less knowledge about the growing patterns and their seasons for cultivation. The study will also be beneficial to those who have minimum spaces and still want to grow their own vegetables at home. The study will be beneficial to those who want to prepare their own homemade natural and chemical free compost at home for their kitchen garden. The kitchen garden designs proposed for various spaces would benefit them to plan a kitchen garden and grow fresh and nutritious herbs and vegetables at home.

**STATEMENT OF PROBLEM**

The present research aimed to develop kitchen garden designs for the residences in Vadodara City.

**OBJECTIVES**

1. To analyse the extent of problems experienced by the users of their existing kitchen garden.
2. To assess the extent of knowledge of the respondents regarding the household compost.
3. To develop designs for kitchen garden for various spaces as follows:
    a. Small space garden (on land)
    b. Medium space garden (on land)
    c. Large space garden (on land)
    d. Terrace garden
    e. Balcony garden
    f. Container garden

4. To develop a booklet in Gujarati and English language regarding all aspects related to kitchen garden.
5. To conduct an intervention program and enhance the knowledge of the homemakers regarding the various aspects of kitchen gardening.

## REVIEW OF LITERATURE

The review of literature chapter was divided into two parts, i.e.; Theoretical Orientation and Empirical Studies focusing on Kitchen Garden, Residential Gardens and composting.

Theoretical Orientation

It covered the topics such as kitchen garden, its meaning and definitions, need and importance of kitchen garden in residences, different types of kitchen garden, planning procedure for developing kitchen garden at home, variety of vegetables and fruits along with their horticultural requirements and compost preparation and its use in kitchen garden at home.

Empirical Studies

This subsection of review of literature consisted of researches conducted in India and abroad on topics of kitchen gardening and composting.

## METHODOLOGY

The present study aimed to develop different kitchen garden designs for the residences of Vadodara city. Therefore, a descriptive research design was considered the most appropriate. The research was conducted in Vadodara city of Gujarat state, India.

**Sample size and Sampling procedure**

For the present study, the sample comprised of 200 homemakers from various areas of Vadodara City who had kitchen gardens in their residence. The sample for the present study was selected through the purposive sampling method and the respondents were contacted through snow ball technique method.

**Selection of Tool**

For the present research, the Questionnaire was selected as the tool. The questionnaire was selected keeping in mind the objectives of the present study.

**Description and Development of the Tool**

Based on the objectives of the present study questionnaire was prepared. While preparing the questionnaire, care was taken to include all such questions that would elicit the information need to attain the objectives of the study.

i. Questionnaire: The questionnaire included three sections.

**Section I**: This section dealt with the questions regarding the background information of the respondents, which included; name, address, phone no, family monthly income, type of family, no. of family members, type of house, type of kitchen garden, ownership, area of the garden, shape of the garden.

**Section II**: This section dealt with the extent of problems experienced by the respondents in maintaining their kitchen garden. The respondents were asked to respond to a 3 point continuum in terms of "always", "sometimes", "never" and the scores from 3 through 1 were given to the respondents respectively. To obtain the categories of extent of problem faced, the score range was divided on an equal interval basis.

**Section III**: This section dealt with the extent of knowledge of the respondents regarding the household compost in the kitchen garden. The respondents were asked to respond to a 3 point continuum in terms of "Yes", "Undecided", "No" and scores from 3 through 1 was given to the respondents respectively. To obtain the categories of extent of problem faced, the score range was divided on an equal interval basis.

**Establishment of Content Validity of the Tool**

The scale was subjected to the establishment of content validity. To test the validity of the statements prepared, the scales were given to a panel of 11 judges, who were from the Family and Community Resource Management and garden officials of vadodara city. There were requested to check the clarity and relevance of the content for each subsection. They have also requested to state whether each statement fell in the category under which it was listed.

A consensus of 80 % among the judges was taken as a benchmark for the inclusion of the statement in the final tool.

**Establishment of Reliability of the Tool**

To test the reliability of the tool for data collection, "pretesting" was done on 30 non-sample respondents and then the reliability value was calculated. The reliability values were found to be high for all the sections of the tool.

**Data Collection Method**

The data was collected with the help of questionnaire. The houses having kitchen garden were identified through snow ball technique from the Vadodara city. The purpose of research was explained and a rapport was built so as to get the true responses. The investigator personally distributed and collected back the filled in questionnaire. The rate of return was 100%.

**Data Analysis**

The procedure of analysis of the data was comprised of categorization, coding, tabulation and statistical analysis.

**Categorization**

1 Background Information: Categorization of the data was done for the Monthly Family Income, Type of Family, No. of Family Income, Type of House, Type of Kitchen Garden, Ownership, Area of the Garden and Shape of the Garden.

a Monthly Family Income: It was referred to the monthly income of the family accrued from various sources.

It was categorized as:

1. Less than 30,000
2. 30,001 to 90,000
3. More than 90,000

b Type of Family: At the time of data collection, the family were falling under the following types:

1. Joint
2. Nuclear

c No. of Family Members: The number of family members staying together under one roof at the time of data collection were categorized as follows:

1. Small (1 – 3)
2. Medium (4 – 6)
3. Large (More than 6)

d Type of House: Based on the information obtained, the following categories were obtained for the type of house.

1. Bungalow
2. Duplex
3. Row House
4. Flat
5. Tenement

e Type of Kitchen Garden: As per the data collected, the following categories were obtained for the type of kitchen garden.

1. Land
2. Balcony
3. Terrace
4. Container

f Ownership:

1. Own
2. Rented

g Area of the Garden (in sq.ft.): Based on the information collected from respondents, the area of the garden were categorized as follows:

1. 50 – 200
2. 201 – 350
3. 351 – 500
4. 501 – 750

h Shape of Garden: As per the data, the shape of the garden was categorised as follow:

1. L – Shape
2. Rectangle
3. Square
4. U – Shape

2 Extent of Problems: In this scale, various problems were considered for the statements. The respondents were asked to respond to a 3 point scale in always, sometimes and never. The scores of 3 through 1 were ascribed to each of the statements which depicted the

extent of the problem. The possible range of score was divided into three categories having an almost equal interval of number.

| Extent of Problems Experienced by the Respondents Regarding their Existing Kitchen Garden | Score range |
|---|---|
| Low Extent | 123-177 |
| Moderate Extent | 178-232 |
| High Extent | 233-287 |

3 Extent of Knowledge: Under this scale, various aspects of knowledge regarding the homemade compost in their kitchen garden were considered for the statements. The respondents were asked to respond to a 3 point continuum in terms of "Yes", "Undecided", "No" and the scores from 3 through 1 were given to the respondents for each of the statements respectively. The possible range of score was divided into three categories having a nearly equal interval of number.

| Extent of Knowledge of the Respondents Regarding the Homemade Compost | Score range |
|---|---|
| Low Extent | 66 - 109 |
| Moderate Extent | 110 - 154 |
| High Extent | 155 - 198 |

**An intervention program for Homemakers**

An intervention program was conducted for the respondents of the study which was focused on enhancing the knowledge of the homemakers regarding various aspects of kitchen garden. An intervention program was delivered in a regional language (Gujarati) for better understanding of the audience. The major focus in the intervention program was to discuss the ways to solve the problems faced by the respondents in their existing kitchen garden. An intervention program also focused on enhancing their knowledge regarding the homemade compost. The developed designs of kitchen garden for various spaces of the residence were also explained to the respondents for creating understanding of the respondents regarding the design aspect of the kitchen garden in various spaces in

their residence, namely; land, terrace, balcony and containers. Other aspect covered under the intervention program was seasonal fruits and vegetables and their horticultural requirements for developing kitchen garden in their residences.

**Design Development of Kitchen Garden in a Residence**

The design development was mainly focused on proposing a modern kitchen design with supportive drawings viz: 2D and 3D drawings with key and description of the following kitchen garden types.

| Sr. No. | Title |
|---|---|
| 1 | Small Space Garden (On Land) (80-120 sq. ft.) |
| 2 | Medium Space Garden (On Land) (140-200 sq.ft.) |
| 3 | Large Space Garden (On Land) (200-600 sq.ft.) |
| 4 | Terrace Garden (Ideal Space) |
| 5 | Balcony Garden (Ideal Space) |
| 6 | Container Garden (Vertical and Horizontal) |

**Development of Booklet**

The booklet developed on "Developing a Kitchen Garden in Residences" had all the techniques and working drawings for developing a kitchen garden at home and the methods to prepare the homemade compost from the kitchen waste. Booklet also covered the ways to overcome the problems experienced by the respondents regarding their existing kitchen garden. The designs for kitchen garden in various spaces of a residence were also included in the booklet. The booklet was in regional (Gujarati) and English language for better understanding. The booklet was given for validation to panel of 11 judges. The judges were from the interior designing field and horticulture field. The booklet content was useful to all the homemakers who were interested in developing a kitchen garden at home.

## MAJOR FINDINGS

The findings of the present research as obtained after the analysis of the data collected are described as follows:

**A. Demographic Profile**

It was observed that majority that is 67% of the respondents were ranging in the income group of 30,001 to 90,000. It was found from the gathered data that the majority of the respondents (62%) were having nuclear family type and less than half of the respondents (36.5%) were having a joint family. Data revealed that majority of the respondents were having upto 4 members in their family. It was observed from the data that the majority of the respondents (33%) were residing in a flat. About 22.5% of respondents were residing in a tenement. It was found that majority of the respondents (33.21%) were having potted type of kitchen garden. Nearly 25% of the respondents were having their kitchen garden on the land. It was revealed from the data that majority of the respondents that is 90% of the respondents owned the house, whereas; only 10% of the respondents were having rented house. It was found that majority of the respondents i.e., 78% of the respondents were having 50-200 sq.ft. area of the garden. Very few respondents had 201 - 350 sq.ft. area of the garden. Data also revealed that more than half of the respondents i.e.; 59.5% having rectangle shape of their garden. 23.5% of the respondents were having square shape of their garden.

**B. Problem experienced by the homemakers in their existing kitchen garden**

The problems were studied for various aspects of the kitchen garden namely; sunlight, water and drainage, soil, food crops and rotation, pollution, compost, seedlings, plants, leaves, bud ends and fruits. Statements related to these aspects were asked to analyse the problems experienced by the respondents related to their existing kitchen garden.

- **Frequency and percentage distribution of the respondents regarding the problems experienced by them in their existing kitchen garden.**

The researcher was interested to find out the extent of problems experienced by the respondents in their existing kitchen. The problems experienced by the respondents in existing garden were found to be at high extent.

| Sr. No. | Extent of Problem | Range of Score | Distribution of the Respondents (n=200) | |
|---|---|---|---|---|
| | | | f | % |
| 1 | Low | 123-177 | 25 | 12.5 |
| 2 | Moderate | 178-232 | 64 | 32 |
| 3 | High | 233-287 | **111** | **55.5** |

## C. Knowledge of the homemakers regarding Homemade Compost

The knowledge of the respondents regarding the homemade compost were asked in four different categories, namely; benefits of homemade composting, types of homemade composting, materials for homemade composting and process and preparation of homemade composting. Statements related to the above categories were asked to the respondent to study their knowledge regarding the homemade compost.

- **Frequency and percentage distribution of the respondents according to their knowledge regarding homemade compost.**

The researcher was also interested to find out the extent of knowledge regarding homemade compost of the respondents. The extent of the knowledge regarding the homemade compost was found to be at low extent by the respondents.

| Sr. No. | Extent of Knowledge | Range of Score | Distribution of the Respondents (n=200) | |
|---|---|---|---|---|
| | | | f | % |
| 1 | Low | 66 - 109 | **92** | **46** |
| 2 | Moderate | 110 - 154 | 90 | 45 |
| 3 | High | 155 - 198 | 18 | 9 |

The detailed findings will be discussed in the thesis at the time of submission.

## DEVELOPMENT OF DESIGNS

Proposed Kitchen Garden designs for various areas of residence

The proposed drawings of kitchen garden are developed keeping in mind the outcome of the findings of the study. The proposed designs were prepared using AutoCAD 2021 and Sketch up 2019 software's.

| Sr. No. | Title |
|---|---|
| 1 | Proposed kitchen garden design of small space land (80-120 sq. ft.) |
| 2 | Proposed kitchen garden design of medium space land (140-200 sq. ft.) |
| 3 | Proposed kitchen garden design of large space land (200-600 sq. ft.) |
| 4 | Proposed kitchen garden design of Residential Terrace (Ideal Space) |
| 5 | Proposed kitchen garden design of Residential Balcony (Ideal Space) |
| 6 | Proposed kitchen garden design of container (vertical) |
| 7 | Proposed kitchen garden design of container (horizontal) |

The development of these designs was based on the information gathered by the researcher. The designer found that various components of kitchen garden were not followed properly or were in poor condition such as placement of plants, placement of annual medicinal and herb plants, direction of sunlight, clearance space between individual plants and preparation of compost. Therefore, the designs developed for each space is focused on these problems and prepared accordingly. The details drawing description and designs will be discussed in the thesis at the time of submission.

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