



Pre-feasibility Study

PLANT NURSERY

June 2022

“The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, and revenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA’s website and consult financial experts to stay current with market conditions.”

Small and Medium Enterprises Development Authority
Ministry of Industries and Production
Government of Pakistan

Table of Contents

1. DISCLAIMER	8
2. EXECUTIVE SUMMARY	9
3. INTRODUCTION TO SMEDA	10
4. PURPOSE OF THE DOCUMENT	11
5. BRIEF DESCRIPTION OF PROJECT & PRODUCTS	11
5.1. Installed and Operational Capacities	46
6. CRITICAL FACTORS	53
7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT	53
8. POTENTIAL TARGET MARKETS/customers	53
9. PROJECT COST SUMMARY	54
9.1. Project Cost	55
9.1.1. Land	55
9.1.2. Building	56
9.1.3. Furniture & Fixtures Requirement	59
9.1.4. IT Equipment Requirement	59
9.1.5. Office Vehicle Requirement	60
9.1.6. Tool and Equipment	60
9.1.7. Pre-Operating Cost	61
9.1.8. Security Against Building	61
9.2. Breakeven Analysis	61
9.3. Revenue Generation	62
9.4. Variable Cost Estimate	66
9.5. Fixed Cost Estimate	67
9.6. Financial Feasibility Analysis	68
9.7. Financial Feasibility Analysis with 50% Debt	68
9.8. Human Resource Requirement	69
10. CONTACT DETAILS	70
11. USEFUL LINKS	71
12. ANNEXURES	72
12.1. Income Statement	72
12.2. Balance Sheet	73
12.3. Cash Flow Statement	74
13. KEY ASSUMPTIONS	75
13.1. Operating Cost Assumptions	75

13.2. Revenue Assumptions	75
13.3. Financial Assumptions	75
13.4. Debt-Related Assumptions	76
13.5. Cash Flow Assumption.....	76

Table of Tables

Table 1: Sale Assumptions	46
Table 2: Selling Capacity of Fruits.....	47
Table 3: Selling Capacity of Vegetables.....	48
Table 4: Selling Capacity of Flowers.....	49
Table 5: Selling Capacity of Indoor Plants	50
Table 6: Selling Capacity of Cactus Plants	51
Table 7: Selling Capacity of Other Products	52
Table 8: Project Cost	55
Table 9: Breakup of Space Requirement	55
Table 10: Building Construction Cost.....	56
Table 11: Shed	57
Table 12: Shed Cost	57
Table 13: Labor-Installation	58
Table 14: Labor-Civil Works	58
Table 15: Galvanized Iron Pipe.....	58
Table 16: Furniture and Fixtures Requirement.....	59
Table 17: IT Equipment Requirement.....	59
Table 18: Office Vehicle Requirement	60
Table 19: Tool and Equipment.....	60
Table 20: Pre-Operating Cost	61
Table 21: Security Against Building	61
Table 22: Breakeven Analysis.....	61
Table 23: Total Revenue Generation.....	62
Table 24: Category Wise - Revenue Generation – Fruit Plants	63
Table 25: Category Wise - Revenue Generation – Vegetable Plants	63
Table 26: Category Wise - Revenue Generation – Flower Plants	64
Table 27: Category Wise - Revenue Generation – Indoor Plants	64
Table 28: Category Wise - Revenue Generation – Cactus Plants.....	65
Table 29: Seasonal Distribution for Revenue	65
Table 30: Other Products-Revenue	65
Table 31: Variable Cost Estimate	66
Table 32: Total Cost of Sale	66
Table 33: Direct Labor	66
Table 34: Packing Cost	67
Table 35: Variable cost Assumptions.....	67
Table 36: Fixed Cost Estimate	67
Table 37: Staff Salaries	67
Table 38: Fixed Cost Assumptions.....	68
Table 39: Financial Feasibility Analysis	68
Table 40: Financial Feasibility Analysis with 50% Debt	68
Table 41: Human Resource Requirements.....	69
Table 42: Contact Details.....	70
Table 43: Useful Links	71
Table 44: Operating Cost Assumptions.....	75
Table 45: Revenue Assumptions.....	75
Table 46: Financial Assumptions.....	75

Table 47: Debt-Related Assumptions	76
Table 48: Cash Flow Assumptions.....	76

Table of Figures

Figure 1: Peach Plant	14
Figure 2: Persimmon (Japani Phal) Plant	14
Figure 3: Orange Plant	15
Figure 4: Mulberry (Shahtoot) Plant	16
Figure 5: Pomegranate (Anaar) Plant	17
Figure 6: Mango Plant	17
Figure 7: Banana Plant	18
Figure 8: Guava (Amrood) Plant	18
Figure 9: Plum (Aaloo Bukhara) Plant	19
Figure 10: Pear (Nashpati) Plant	19
Figure 11: Grape Fruit (Chakotra) Plant	20
Figure 12: Lemon Plant	21
Figure 13: Cabbage Plant	21
Figure 14: Cauliflower (Phool Gobi) Plant	22
Figure 15: Tomato Plant	22
Figure 16: Green Chili Plants	23
Figure 17: Onion Plants	23
Figure 18: Radish (Mooli)	24
Figure 19: Lady Finger (Bhindi) Plant	24
Figure 20: Carrot (Gaajar) Plant	25
Figure 21: Cucumber Plant	25
Figure 22: Capsicum (Shimla Mirch) Plant	26
Figure 23: Spinach Plant (Paalak)	26
Figure 24: Rose Plant	27
Figure 25: Pansy Plant	28
Figure 26: Tecoma Flower	28
Figure 27: Hibiscus Flower	29
Figure 28: Crape Jasmine (Chandni) Flower	29
Figure 29: Plumeria (Gulachin) Flower	30
Figure 30: Marigolds Flower	30
Figure 31: Brunfelsia Flower	31
Figure 32: Jasmine Flower	31
Figure 33: Tulip Flower	32
Figure 34: Bougainvillea	33
Figure 35: Gladiolus	33
Figure 36: Golden Palm Indoor Plant	34
Figure 37: Cane Palm Indoor Plant	35
Figure 38: Parlour Palm Indoor Plant	35
Figure 39: Ravenea Palm Indoor Plant	35
Figure 40: Lavender Palm Indoor Plant	36
Figure 41: Fishtail Palm Indoor Plant	37
Figure 42: Draco Dracaena Indoor Plant	37
Figure 43: Aglaonema Indoor Plant	38
Figure 44: Dieffenbachia (Dumb Canes) Indoor Plant	38
Figure 45: Peace Lily Indoor Plant	39

Figure 46: Lucky Bamboo Indoor Plant	39
Figure 47: Araucaria Indoor Plant.....	40
Figure 48 : Money Plant	40
Figure 49: Gymnocalycium Cactus Plant	41
Figure 50: Astrophytum Asterias Cactus Plant.....	41
Figure 51: Mammillaria Cactus Plant	42
Figure 52: Cereus Night Blooming Cactus Plant	43
Figure 53: Succulent Cactus Plant	43
Figure 54: Haworthia Cactus Plant.....	44
Figure 55: Agave Cactus Plant	44

1. DISCLAIMER

This information memorandum is to introduce the subject matter and provide a general idea and information on the said matter. Although, the material included in this document is based on data/information gathered from various reliable sources; however, it is based upon certain assumptions, which may differ from case to case. The information has been provided on as is where is basis without any warranties or assertions as to the correctness or soundness thereof. Although, due care and diligence has been taken to compile this document, the contained information may vary due to any change in any of the concerned factors, and the actual results may differ substantially from the presented information. SMEDA, its employees or agents do not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The contained information does not preclude any further professional advice to be obtained by the user. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information which is necessary for making an informed decision, including taking professional advice from a qualified consultant/technical expert before taking any decision to act upon the information.

For more information on services offered by SMEDA, please contact our website:

www.smeda.org.pk

Document Control

Document No.	261
Prepared by	SMEDA-Punjab OS
Preparation Date	June 2022
For information	helpdesk.punjab@smeda.org.pk

2. EXECUTIVE SUMMARY

The pre-feasibility study on “Plant Nursery” (hereinafter referred to as the proposed business/proposed unit) provides information about setting up a retail nursery of different types of plants. A nursery is a place where plants are propagated and grown to a desired size. Mostly, these plants are for gardening, forestry or conservation biology,¹ rather than agriculture. The proposed unit will procure seeds or young plants of different ages, maintain and grow those in the nursery, and sell to the local customers.

A nursery is a place where plants are propagated and grown to a desired size. Nurseries can be classified into three categories, including retail nurseries, wholesale nurseries and private nurseries. Retail nurseries sell plants to the general public for home gardening and/or commercial organizations. Wholesale nurseries sell plants only to other nurseries and commercial gardeners. The private nurseries grow and exclusively sell plants to a larger client such as institutions or private estates. The proposed plant nursery has been assumed to operate on retail basis. Margin concept is used to calculate profit percentages on selling prices.

Retail nursery business directly targets the end consumers, typically homeowners. This is most commonly done either through retail nurseries, which produce some of their plants through propagation method or more commonly purchase their inventory from a wholesale nursery. These retail nurseries are located ideally near urban or high-traffic areas for ease of access for the potential consumers.

The proposed retail nursery shop will operate for 12 hours a day for 330 days in a year. The proposed project will sell different categories of plants and other products. The plants include fruits, vegetables, flowers, indoor plants and cactus and the other products includes clay (Mitti/Bhal), farmyard manure (Gobar Khaad), Urea, Di-Ammonium Phosphate (DAP), NPK, vegetable seeds, clay pots of 10-inch, 12 inch and 14-inch. The proposed unit has an annual capacity to sell 60,000 plants which includes 10,000 fruit plants, 13,000 vegetable plants, 20,000 flower plants, 12,000 indoor plants and 5,000 cactus plants and sell 10,680 units of other products which includes 1,200 50-kg bags of clay (Mitti/Bhal), 960 50-kg bags of farmyard manure (Gobar Khaad), 600 1-kg bags of Di-Ammonium Phosphate, 480 1-kg bags of urea, 480 1-kg bags of NPK, 2,400 packets of vegetable seeds, 1,800 10 inch clay pots, 1,560 12 inch clay pots and 1,200 14 inch clay pots at 100% selling capacity. The total production of the proposed unit is divided between 80% season and 20% offseason sale. This project is financed through 100% equity. The project is assumed to attain 70% capacity utilization in the first year of operations. The production capacity utilization is assumed to increase at a rate of 5% per annum to reach at a maximum of 90% in year 5.

¹ Conservation biology is the study of the conservation of nature and of Earth's biodiversity with the aim of protecting species, their habitats, and ecosystems from excessive rates of extinction and the erosion of biotic interactions.

The Plant Nursery is proposed to be ideally located in larger cities like Karachi, Lahore, Gujranwala, Islamabad, Quetta, Multan, Rawalpindi, Faisalabad, Sargodha, Peshawar, Sialkot, Hyderabad, Sukkur, Mardan, Muzaffarabad, Bahawalpur, etc. The main reasons for selecting these cities are presence of large customer base, access to water and availability of labor.

The proposed project will be set up in a rented land having an area of 7,000 sq. ft. (31.11 marlas). Of this, 12.18 Marlas will be covered by shed for housing indoor plants, cactus plants and storing other products. The proposed project requires a total investment of PKR 5.53 million. This includes capital investment of PKR 5.03 million and working capital of PKR 0.5 million. This project is financed through 100% equity. The Net Present Value (NPV) of project comes out to be PKR 22.03 million with an Internal Rate of Return (IRR) of 80% and a Payback period of 1.85 years. The project is expected to generate gross annual revenues of PKR 32.54 million during 1st year, Gross Profit (GP) ratio ranging from of 33% to 37% and Net Profit (NP) ratio ranging from 10% to 17% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 45% (31,896 plants and other products) with breakeven revenue of PKR 20.98 million in a year.

The proposed project may also be established using leveraged financing. At 50% financing, at a cost of KIBOR+3%, the proposed unit provides Net Present Value (NPV) of PKR 25.88 million, Internal Rate of Return (IRR) of 78% and Payback period of 1.92 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 10% to 17% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 45% (32,136 plants and other products) with breakeven revenue of PKR 21.13 million.

The proposed project will provide employment opportunities to 14 people. The legal form of this project is proposed as "Sole Proprietorship" or "Partnership Concern".

3. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectorial research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification

of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

National Business Development Program for SMEs (NBDP) is a project of SMEDA, funded through Public Sector Development Program of Government of Pakistan.

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of providing an effective handholding to SMEs. The proposed program is aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

4. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to provide information to the potential investors about "Plant Nursery" The document provides a general understanding of the business to facilitate potential investors in crucial and effective investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attain greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business setup and its successful management.

Apart from carefully studying the whole document, one must consider critical aspects provided later on, which form basis of any investment decision.

5. BRIEF DESCRIPTION OF PROJECT & PRODUCTS

A nursery is a place where plants are propagated and grown to a desired size. Mostly these plants are for gardening, forestry or conservation biology,² rather than agriculture. These include i) retail nurseries, which sell to the general public for home gardening and/or to commercial enterprises, ii) wholesale nurseries which sell only to other nurseries and to commercial gardeners, and ii) private nurseries, which meet the needs of institutions or private estates. The proposed project provides information for

² Conservation biology is the study of the conservation of nature and of Earth's biodiversity with the aim of protecting species, their habitats, and ecosystems from excessive rates of extinction and the erosion of biotic interactions.

establishing and running the business of a retail nursery. Retail nursery directly targets the end consumers, typically homeowners.

Retail business is the sale of goods to general public in relatively smaller volumes. The proposed project is based on Business-to-Consumer (B2C) model in which the businesses sell products, services, or information directly to consumers. The proposed project targets to sell fruit, vegetable, flower, indoor and cactus plants. These plants will be sold to different segments of the market; defined by different demographic factors, such as age, income, or specific interests of different types of customers.

In the business of plant nursery, access to large supplies of water is important, since plants' growth and survival depends on that. Therefore, the proposed nursery business will set up its own water bore system to meet its water requirements. Business will extract underground water using an electric pump and store the water in under-ground constructed tank.

It has been assumed that the proposed nursery business uses margin concept to calculate profit percentages on the selling prices. Margin is an accounting concept that is applied to the selling price of an item to assist the retailer to determine the best-selling price of the product.

According to the primary market research, in this sector, the gross margins on sale (excluding any other variable and fix cost) of fruit, vegetable and flower plants range from 30% to 40%; whereas for indoor plants the margins range from 40% to 50% and for cactus plants, the margins range from 35% to 45%. In the proposed project, the profit margin for fruits, vegetable and flower plants has been assumed to be 40% and for indoor plants, it is assumed to be 50%.and for cactus plants it is assumed to be 45%.

As per business norms, the sales change directly with the seasonal effect of plants. Therefore, the proposed project has considered the sales in two portions, season sale and off-season sale. 80% of the business's total sale has been assumed to be the season sale and 20% the off-season sale.

Pakistan is facing severe climate change threats such as continues increase in temperature. Government is making serious efforts to create awareness in society for plantation and protection of forests. In line with this policy, demand for plants and nurseries is continuously on a rise. There are some very big nurseries established in Pattoki and Kasur in the province of Punjab. Not only in big cities but in smaller towns as well, people are becoming more and more aware about the importance of plants.

Plant Propagation

Plant propagation is the process of creating new plants. There are two types of propagation methods: sexual and asexual. Sexual propagation is the reproduction of plants by seeds. Sexual propagation involves the union of the pollen (male) with the egg (female) to produce a seed. In seed propagation, seeds can be germinated and planted in individual containers or starter plugs until they form seedlings. Once germinated, these seedlings can then be transferred to larger containers, or planted

in beds or fields. In addition, seeds may also be sown directly into the ground and allowed to grow. Additionally, seeds may be gathered from parent plants, or they can be purchased. However, usually, the nurseries, do not purchase seeds, since for seed propagation, a large area is required. Due to limited availability of area, the nurseries usually purchase seedling of plants which are then sold to the customers.

Asexual propagation involves taking a part of one parent plant and allowing it to regenerate itself into a new plant. The resulting new plant is genetically identical to its parent. Asexual propagation is the best way to maintain species. Asexual way of propagation is cheaper, easier and faster compared to sexual propagation. Major methods of asexual propagation are cuttings, grafting, offset and budding.

Cutting

A cutting is a vegetative plant part which is cut from the parent plant in order to regenerate itself, thereby forming a whole new plant. The cutting is placed in a suitable medium such as moist soil. If the conditions are suitable, the plant piece will begin to grow as a new plant independent of the parent.

Offset

A portion of a branch or stem via which a plant can reproduce asexually and produce a new daughter plant is known as an offset. Plants use offset as a form of vegetative reproduction. Plant offsets are propagated by either cutting the offset off the mother plant with a sharp, sterile knife, or by gentle separation.

Grafting

Grafting is an artificial method of asexual reproduction used to produce plants, combining favorable stem characteristics with favorable root characteristics. In grafting, two plant species are used; part of the desirable plant stem is grafted onto a rooted plant called the stock. The part that is grafted or attached is called the scion. Both parts are cut at an oblique angle (any angle other than a right angle), placed in close contact with each other and are then held together. Four conditions must be met for grafting to be successful: the scion and rootstock must be compatible; each part must be at the proper physiological stage; the cambial layers of the scion and stock must meet, and the graft union must be kept moist until the wound has healed.

Budding

Propagation by budding is a common method of plant propagation, in which a plant bud is grafted onto the stem of a rootstock plant. Budding is the union of one bud and a small piece of bark from the scion with a rootstock. Budding is a form of vegetative or clonal plant propagation by which an exact replica of the parent plant is produced.

Fruits Plants Considered in the Proposed Project

For the proposed project, following fruits plants have been considered, based on the popularity of these fruits in Pakistan.

Peach (Aaroo)

Peach is a type of fruit which is botanically called drupe. It is a large, round fruit, with a velvety, thin and easy to peel skin. Its flesh is in a yellowish to whitish color, sweet, juicy, giving off a pleasant aroma. Most peach trees are grown by grafting to help improve their resistance to disease, although they will also grow reliably from cuttings. Peach fruit usually arrive in summer season while its plant grows in all seasons. Figure 1 shows peach plant.

Figure 1: Peach Plant



Persimmon (Japani Phal)

Persimmon is a tree that is grown for its beautiful foliage and edible fruit. It is leathery and glossy on the upper surface, and brown and silky underneath. The leaves are deciduous³ and bluish-green in color. In Autumn, they turn to yellow, orange or red. Persimmon trees are typically dioecious⁴. Persimmon plant is most commonly propagated from graft. However, it also propagates reliably from softwood cuttings if the cuttings are treated with hormone and kept under moderately humid and warm conditions. Persimmon fruit usually arrives in winter season while its plant grows in all seasons. Figure 2 shows persimmon (japani phal) tree.

Figure 2: Persimmon (Japani Phal) Plant

³ Deciduous plants are those that lose all of their leaves for part of the year

⁴ Dioecious plants house the male and female flowers on different plants. So not only does the plant have separate male/female flowers, they have male plants (with only male flowers) and female plants (with only female flowers)



Oranges (Malta)

Orange trees have dark green shiny leaves and small white flowers with five petals. An orange has a tough shiny orange skin. Inside, the fruit is divided into segments, which have thin tough skins that hold together many little sections with juice inside. Although grafting is more common, orange trees can also be grown from cuttings. Orange fruit usually arrive in winter season while its plant grows in all seasons. Figure 3 shows an orange plant.

Figure 3: Orange Plant



Mulberry (Shahtoot)

Mulberry trees are deciduous and have toothed, sometimes lobed leaves that are alternately arranged along the stems. Mulberries can be grafted; however, a grafted

mulberry will begin flowering and fruiting in its first or second year because it skips the juvenile phase by using the mature wood of an older tree. Mulberry fruit usually arrives from late spring through mid-summer season while its plant grows in all seasons. Figure 4 shows mulberry (shahtoot) tree.

Figure 4: Mulberry (Shahtoot) Plant



Pomegranate (Anaar)

The pomegranate usually has a thick reddish skin but can range from yellow to purple and can have around 600 seeds. Each seed is surrounded by a sweet edible pulp called aril, and can range in color from white to deep red or purple. The seeds are embedded in a white, spongy, bitter pulp. Growing a pomegranate tree from cuttings is the preferred method of pomegranate tree propagation, pomegranates are not grafted onto any rootstock. Pomegranate fruit usually arrives in winter season while its plant grows in all seasons. Figure 5 shows pomegranate (Anaar) plant.

Figure 5: Pomegranate (Anaar) Plant**Mango**

Mango is an evergreen tree. The mango tree is erect and branching with a thick trunk and broad, rounded canopy. The leaves of the tree are shiny and dark green. The mango fruit is roughly oval, with uneven sides. The fruit is a drupe, with an outer flesh surrounding a stone. The flesh is soft and bright yellow-orange in color. The skin of the fruit is yellow-green to red. Mango tree grafting is the most reliable and economical method of mango propagation. When propagating by seed, trees take longer to produce fruit and are more difficult to manage than those that have been grafted, thus mango tree grafting is the preferred method of propagation. Mango fruit usually arrives in summer season while its plant grows in all seasons. Figure 6 shows mango plant.

Figure 6: Mango Plant**Banana (Kayla)**

The banana plant is not a tree. It is a giant herbaceous plant with an apparent trunk that bends without breaking. The banana has an underground stem with adventitious roots. Alongside the main stem, it has other stems called suckers. These stems grow into new banana plants. The banana plant yields fruits. Nurseries procure baby plant of banana and then sell it to the market. Banana is sown two times in a year, in spring and in autumn but the plant grows in all seasons. Figure 7 shows banana plant.

Figure 7: Banana Plant



Guava (Amrood)

Guava is round to pear-shaped fruit and its pulp contains many small hard seeds (more abundant in wild forms than in cultivated varieties). The fruit has a yellow skin and white, yellow, or pink flesh. Guava can be propagated by both grafting and cutting. Guava is sown two-times in a year, in winter and in summer but the plant grows in all seasons. Figure 8 shows guava (Amrood) plant.

Figure 8: Guava (Amrood) Plant



Plum (Aaloo Bukhara)

The flesh of plum is firm and juicy while its peel is smooth, with a natural waxy surface that adheres to the flesh. The plum is a drupe, meaning its fleshy fruit surrounds a single hard fruit stone which encloses the fruit's seed. Plum can be propagated from seed or from grafting/cuttings. Tree grown from seed may vary from the original parent tree, depending upon the variety. Cuttings and graftings are the best way to get a tree that is the same as the parent tree. Plum usually arrives in summer season while its plant grows in all seasons. Figure 9 shows plum (Aaloo Bukhara) plant.

Figure 9: Plum (Aaloo Bukhara) Plant



Pear (Nashpati)

Pear fruits are generally sweeter and of softer texture than apples and are distinguished by the presence of hard cells in the flesh. In general, pear fruits are elongate, being narrow at the stem end and broader at the opposite end. Most pear tree propagation is done through rootstock grafting, but with the proper care, growing pear trees from a cutting is also possible. Pear usually arrives in summer season while its plant grows in all seasons. Figure 10 shows pear (Nashpati) plant.

Figure 10: Pear (Nashpati) Plant



Grape Fruit (Chakotra)

The grapefruit has a slightly flattened spherical shape, with a pale yellow or reddish smooth or rough, thick skin of a pale greenish color, that turns into yellow when it matures. It has a bitter flavor. The pulp is divided in 10-12 gores⁵ that have also a bitter taste, due to the so-called naringin substance⁶. Grapefruit trees are typically grafted onto the rootstock of another citrus tree through budding. Grape fruit usually arrives in summer season while its plant grows in all seasons. Figure 11 shows grape fruit (Chakotra) plant.

Figure 11: Grape Fruit (Chakotra) Plant



Lemon Tree

The lemon tree reaches 10 to 20 feet in height and usually has sharp thorns on the stem. Leaves are reddish when young and become dark green above and light green below. The lemon is a round, slightly elongated fruit, it has a strong and resistant skin, with an intense bright yellow color when it is totally ripe, giving off a special aroma when it is cut. The pulp is pale yellow, juicy and acid. Budding is the best method for propagating lemon trees because it works well for citrus and requires less skill than other types of graftings. Lemon usually arrives in summer season while its plant grows in all seasons. Figure 12 shows lemon plant.

⁵ Gores are the yellow-orange fruit patches oblate spheroid in shape and generally skinned.

⁶ A bitter crystalline glycoside that is found in the blossoms or fruit of the grapefruit. Naringin is a flavonoid that lends grapefruit its bitter taste.

Figure 12: Lemon Plant***Vegetable Plants Considered in the Proposed Project***

For the proposed project, the following vegetable plants have been considered, based on the popularity of these vegetables in Pakistan.

Cabbage (Band Gobi)

Cabbage is a vegetable having succulent leaves covered with a waxy coating, which often gives the leaf surface a gray-green or blue-green color. Cabbage is typically grown from seeds which are sown in the soil to produce seedlings which are then sold to the customers. The cabbage plant gives production in winter season. Figure 13 shows cabbage plant.

Figure 13: Cabbage Plant

Cauliflower (Phool Gobi)

Cauliflowers are annual plants⁷ that reach about 0.5 meter (1.5 feet) tall and bear large, rounded leaves that resemble collards. Cauliflower is typically grown from seeds which are sown in the soil to produce seedlings, which are then sold to the customers. The cauliflower plant gives production in winter season. Figure 14 shows cauliflower (Phool Gobi) plant.

Figure 14: Cauliflower (Phool Gobi) Plant



Tomato

Tomatoes are available in different shapes, sizes and colors but usually in the local market, commonly available tomatoes are globe shaped which have reddish color. Tomatoes are typically grown from seeds which are sown in the soil to produce seedlings, which are then sold to the customers. The tomato plant gives production in winter season. Figure 15 shows tomato plant.

Figure 15: Tomato Plant



⁷ Annual plants are the plants that complete their life cycle in one year. They germinate, grow, bear fruits and die off within a year.

Green Chili

Green chilies are hollow, and the pith⁸ and seeds are the hottest part. Green chilies have a different flavor than those of other colored chilies. Green chilies are typically grown from seeds which are sown in the soil to produce seedlings, which are then sold to the customers. The green chili plant gives production in winter season. Figure 16 shows green chili plant.

Figure 16: Green Chili Plants



Onion

Onions are fleshy, hollow, and cylindrical, with one flattened side. The leaves of onion are yellowish- to bluish green and they grow alternately in a flattened, fan-shaped swathe. Onions are typically grown from seeds which are sown to produce seedlings which are then sold to the customers. The onion plant gives production in winter season. Figure 17 shows onion plants.

Figure 17: Onion Plants



Radish (Mooli)

⁸ This is where the seeds of the plant are attached to the top of the fruit. It is known as the pith and lies directly below the calyx. This part of the plant is where most of the capsaicin in the chili pepper fruit resides.

Radishes represent a group of root vegetables with light-colored, crunchy flesh, variable skin color, and an almost spicy, peppery taste. They vary in shape from short and round to long and narrow, and the skin can be red, black, white, yellow, pink, or purple. Radish is propagated directly from seed. Radish is essentially a cold-season crop and can be cultivated throughout the year but October to January is the best period Figure 18 shows radish plant.

Figure 18: Radish (Mooli)



Lady Finger (Okra) (Bhindi)

Lady finger (Okra) is a green colored oblong shaped vegetable, tapering at the end with tiny seeds inside. Lady finger is mainly grown from seeds. The seeds are sown in the soil to produce seedlings which are then sold to the customers. The lady finger plant gives production in winter season. Figure 19 shows lady finger (Bhindi) plant.

Figure 19: Lady Finger (Bhindi) Plant



Carrot (Gaajar)

Carrot has a long, narrow, cylindrical cone shape root, but they are also found in other varieties that may be thick and short in shape, or that are orange, red, purple, yellow, or white in color. The carrot has a sweet flavor and is one of the most popular versatile root vegetables. Carrots can either be propagated by seeds or by carrot tops. Usually

the first method is preferred, but the latter is also used moderately. Carrots are a cool-season crop grown in spring. Figure 20 shows carrot plant.

Figure 20: Carrot (Gaajar) Plant



Cucumber

Cucumbers represent a type of edible plant that belongs to the gourd family. It is widely cultivated and makes a nutritious addition to any diet. Cucumber is usually considered a vegetable because of how its use as an edible item. However, as it grows from flowers and contains seeds, it is botanically a fruit. It is a summer season vegetable. Figure 21 shows cucumber plant.

Figure 21: Cucumber Plant



Capsicum (Shimla Mirch)

Capsicum is also known as Bell peppers, sweet pepper or Shimla mirch. It is available in various colors such as orange, yellow, green, red, and purple. The green and purple capsicums are mildly bitter whereas the yellow, red, and orange capsicums are somewhat sweet in taste. In Pakistan, capsicums are commonly grown from seed which are sown in the soil and the seedlings are produced. These seedlings are then

sold to the customers. The capsicum plant gives production in winter season. Figure 22 shows capsicum (Shimla Mirch) plant.

Figure 22: Capsicum (Shimla Mirch) Plant



Spinach (Paalak)

Spinach is a plant whose leaves are green, arranged in rosette and are eaten raw or cooked. The leaves have an oval shape and are wrinkled; they can be whole or sawed. It is a very nutritious, tasteful and easy-to-digest plant. Spinach is usually propagated from seeds. Spinach is sown throughout the year. For winter season, best time for sowing is from September to October. For spring season complete sowing from Mid-February to April. Figure 23 shows spinach plant.

Figure 23: Spinach Plant (Paalak)



Flower Plants Considered in the Proposed Project

For the proposed project, the following flower plants have been considered, based on the popularity of these flowers in Pakistan.

Rose (Gulaab)

Roses come in many different species and cultivars and the characteristics of the rose flower can vary based on these variables. Along with the traditional red rose, other hues, including white, pink, dark mauve, yellow and varying shades in between, are just as beautiful. Some roses have petals that are bi-color or tri-color. Roses are popular garden flowers that are prized for a range of qualities. Roses are valued for their rich and varied colors, profusion of bloom, velvety petal texture and, in many cultivars, a rich sweet scent. Rose petals are finely textured and veined but feel smooth and cool to the touch. Rose propagation is done by both grafting and cutting. Most roses will bloom in spring, with some varieties bloom again in the fall. Still, other varieties will bloom from spring through fall. Figure 24 shows rose (Gulaab) plant.

Figure 24: Rose Plant



Pansy

Pansy blooms are single with five petals that are rounded in shape. Pansy flowers have one of three basic color patterns. Blooms can be single, clear color, such as yellow or blue. A second pattern is a single color having black lines radiating from its center. The flower Pansy has a very special fragrance. Pansy is easy to plant and can be planted indoors or outdoors. More commonly, the propagation of pansy flowers is done through cutting method. Pansy flowering season is from spring to summer in cool climates, after which the flowers die as temperatures rise. However, pansy bloom time is fall to winter in hot areas. Figure 25 shows pansy flower plant.

Figure 25: Pansy Plant

Tecoma

Tecoma, commonly called yellow bells, it is a broadleaf evergreen shrub or small tree that grows from 10 to 25 feet tall and features a lengthy bloom of bright yellow tubular flowers. The propagation of Tecoma flower is usually done through cutting method. Tecoma has a very long flowering season, from early summer to late fall. Figure 26 shows Tecoma flower.

Figure 26: Tecoma Flower

Hibiscus

The hibiscus is a member of the Mallow family which has nearly 300 species including trees, shrubs, perennials and annuals. They are native to warmer, tropical regions. In our northern climate, is the species most commonly available through nurseries, garden centers and florists. Hibiscus are bred specifically for flower size and color. Hibiscus make great house plants and are also wonderful additions to a garden. The easiest method of propagating hibiscus is from vegetative cuttings. Perennial hibiscus blooms in mid to late summer. Flowers are typically white, pink, lavender, red, or burgundy. Figure 27 shows hibiscus plant with flowers.

Figure 27: Hibiscus Flower**Crape Jasmine or Chandni**

Crape jasmine or Chandni is a little shrub with a rounded shape and pinwheel flowers reminiscent of gardenias. Crape jasmine is an attractive evergreen tree with green twigs and milky sap. With its ruffled-edge, white double flowers, this plant creates a big show of blossoms in spring and then blooms on and off through summer. Their fragrance is stronger by evening. Jasmine propagation is also possible from rooting jasmine cutting method that will create healthy young jasmine plants. Figure 28 shows Crape Jasmine (Chandni) plant with flowers.

Figure 28: Crape Jasmine (Chandni) Flower**Plumeria (Gulachin)**

A Plumeria's deep-green, long, leathery leaves grow in dense clumps at the tips of its branches, clusters of five-petaled flowers bloom amid the leaves. Large and aromatic, flowers can be white, cream, yellow, pink, lilac, or red. Plumerias are beautiful tropical plants. They grow to be large trees in warm climates and are popular for their fragrant flowers. Propagation is done through stem cuttings that produce a plant that is true to

the parent. The Plumeria cuttings can be rooted in soil or water with equal success. Plumeria plants bloom during rainy, warm weather, which may be mid to late spring or summer depending on the climate. Figure 29 shows plumeria (Gulachin) flower.

Figure 29: Plumeria (Gulachin) Flower



Marigolds

Marigolds have cheery blooms that showcase a spectrum of yellow, orange and red shades. Hybrids may have two-toned flowers, such as scarlet flowers with yellow margins. The dark green, pungent-smelling marigold leaves have a lacy, delicate appearance. Marigolds are fast and easy to grow and it is also possible to propagate marigolds from cuttings. Because of its bright orange or copper-like color, Marigold is the perfect flower to plant in gardens during the fall. Marigold flower blossom in autumn season. Figure 30 shows marigolds flowers.

Figure 30: Marigolds Flower



Brunfelsia

Brunfelsia is also known as yesterday today tomorrow because 3 colored flowers are simultaneously present on a single plant. The new flower is deep purple, the next day it turns light purple and on the third day it is white. Brunfelsia attracts flower growers from all over the world with its bright flowering and unique aroma, which as a rule appears at night. When they first open, they are a violet color, fading to lavender blue

and then white, with the three colors present on the bush at the same time. Brunfelsia propagation can be done through cuttings. The true beauty of Brunfelsia is in its flowers. Sweetly perfumed, they appear in autumn season. Figure 31 shows Brunfelsia flowers.

Figure 31: Brunfelsia Flower



Jasmine

Jasmine is a very popular flower around the world, especially in the tropics because of its unique fragrance. The Jasmine flowers are white in most species, with some species being yellow. Jasmine often has five or six lobes. Jasmines are often strong and sweet scented. Jasmine is widely cultivated for their shining leaves and beautiful clusters of fragrant flowers. Jasmines have oval, shiny leaves and tubular, waxy-white flowers. Jasmines can be propagated by cuttings. Outdoor varieties are best propagated from cuttings taken in winter, but tender and glasshouse varieties do best from cuttings taken in spring or summer. Jasmine blooms in clusters from spring until well into the fall. The sweet flowers are most often cream, white or yellow, depending on the variety. Figure 32 shows jasmine flower.

Figure 32: Jasmine Flower



Tulip

Tulips are erect flowers with long, broad, parallel-veined leaves and a cup-shaped, single or double flower at the tip of the stem. Colors of the flowers range anywhere from red to yellow to white. Tulips are known for their bold colors and beautiful shape, and most varieties are indeed almost perfectly symmetrical. Tulip cannot propagate from cutting method because tulip roots only come from the bulb. Figure 33 shows tulip plants with flowers.

Figure 33: Tulip Flower



Bougainvillea

Bougainvillea is a genus of thorny ornamental vines, bushes, and trees with flower-like spring leaves near its flowers. Bougainvillea grows as a woody vine or shrub, reaching 15 to 40 feet with heart-shaped leaves and thorny stems. The flowers are generally small and white, highlighted by several brightly colored modified leaves called bracts. The bracts' range of colors includes the classic red, purple, orange, apricot, white, pink, cream, yellow and bi-color mutations. Bougainvillea propagation can be done through cuttings. Bougainvillea in the garden offers green foliage year-round and brilliant blooms in winter to summer. Figure 34 shows bougainvillea plant with flowers.

Figure 34: Bougainvillea**Gladiolus**

Gladiolus is a perennial flowering plant which has sword shape leaves, funnel shaped perianth and spoon shaped branches. It bears numerous funnel-shaped flowers all clustered on one side of the stem each with six petal-like floral parts. There is an extensive range of flower colors available, including shades of white, cream, yellow, orange, red, pink, lavender, purple and green. Gladiolus are propagated by corms, a specialized underground stem, similar to a bulb. The flowers bloom mainly in the month of October-March. Figure 35 shows gladiolus plants with flowers.

Figure 35: Gladiolus

Indoor Plants Considered in the Proposed Project

For the proposed project, the following indoor plants have been considered, based on the popularity of these indoor in Pakistan. As per research, for indoor plants shed is as an essential element for maintaining these plants.

Golden Palm

The golden palm civet has two morphs; one golden and one dark brown. The dorsal pattern consists of faint bands and spots that are slightly darker than the ground color. The lower side is slightly paler and sometimes greyer than the upper. Golden palm can be propagated from its seeds and also by removing one of the offshoots that grows from its base. It grows throughout the year. Figure 36 shows golden palm indoor plant.

Figure 36: Golden Palm Indoor Plant

**Cane Palm**

A cane palm is a clumping palm tree which is often called the golden cane palm in reference to the gold tinge on the trunk and leaves. Cane palm can be propagated from its seeds and also by removing one of the offshoots that grows from its base. It grows throughout the year. Figure 37 shows cane palm indoor plant.

Figure 37: Cane Palm Indoor Plant**Parlor Palm**

Parlor palm is a species of small palm tree native to the rainforests. Parlor palm can be propagated from its seeds and also by removing one of the offshoots that grow from its base. It grows throughout the year. Figure 38 shows Parlor palm indoor plant.

Figure 38: Parlour Palm Indoor Plant**Ravenea Palm**

Ravenea Palm has upward-arching leaves divided into long, thin fingers. Ravenea palm can be propagated from its seeds and also by removing one of the offshoots that grows from its base. It grows throughout the year. Figure 39 shows Ravenea Palm indoor plant.

Figure 39: Ravenea Palm Indoor Plant



Lavender Palm

Lavender Palm is an indoor plant having purple flowers all over it. It should receive as much light as possible. Lavender palm can be propagated from its seeds and also by removing one of the offshoots that grow from its base. It grows throughout the year. Figure 40 shows lavender palm indoor plant.

Figure 40: Lavender Palm Indoor Plant



Fishtail Palm

Fishtail Palm thrives in warm temperatures and humidity. This palm is one of the easiest indoor palm plants to grow, requiring little care. Grown as an indoor palm tree, it can reach several feet tall indoors, therefore it needs some vertical space. Fishtail palm can be propagated from its seeds and also by removing one of the offshoots that

grow from its base. It grows throughout the year. Figure 41 shows Fishtail palm indoor plant.

Figure 41: Fishtail Palm Indoor Plant



Draco Dracaena

Draco Dracaena is an evergreen long lived tree. It has a reddish resin in it which is called dragon blood used for several purposes. Draco Dracaena can be propagated from its seeds and also by removing one of the offshoots that grows from its base. It grows throughout the year. Figure 42 shows Draco Dracaena indoor plant.

Figure 42: Draco Dracaena Indoor Plant



Aglaonema

Aglaonema are evergreen perennials with stems growing erect or lying down decumbent and creeping. Stems that grow along the ground may root at the nodes. There is generally a crown of wide leaf blades which in wild species having patches of silver and green coloration. Aglaonema can be propagated from its seeds and also by removing one of the offshoots that grow from its base. It grows throughout the year. Figure 43 shows Aglaonema indoor plant.

Figure 43: Aglaonema Indoor Plant



Dieffenbachia

Dieffenbachia (dumb canes) is a perennial herbaceous plant with straight stem, simple and alternate leaves containing white spots and flecks, making it attractive as indoor foliage. Dieffenbachia can be propagated from its seeds and also by removing one of the offshoots that grows from its base. It grows throughout the year. Figure 44 shows Dieffenbachia (dumb canes) indoor plant.

Figure 44: Dieffenbachia (Dumb Canes) Indoor Plant



Peace Lily

Peace lily are evergreen herbaceous perennial plants with large leaves. The flowers are produced in a spadix,⁹ surrounded by a long, white, yellowish, or greenish spathe. Peace lily can be propagated from its seeds and also by removing one of the offshoots that grows from its base. It grows throughout the year. Figure 45 shows Peace Lily indoor plant.

Figure 45: Peace Lily Indoor Plant



Lucky Bamboo

The lucky bamboo plant has slightly twisted leaves of grey-green color. The stem is fleshy, which distinguishes it from bamboo. It requires bright, ventilated areas. It tolerates dry air and does not require constant spraying. Lucky bamboo can be propagated from its seeds and also by removing one of the offshoots that grows from its base. It grows throughout the year. Figure 46 shows lucky bamboo indoor plant.

Figure 46: Lucky Bamboo Indoor Plant

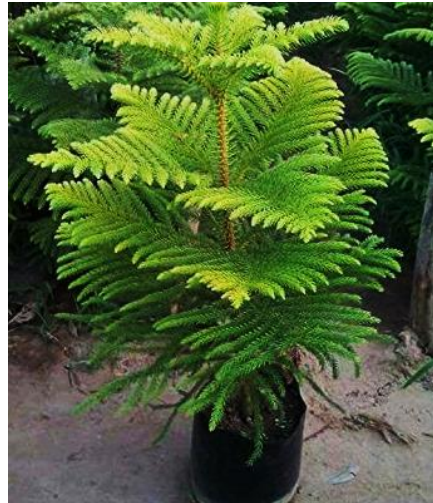


⁹ A spathe is a single bract that surrounds the spadix, which is a flowering spike. It is typically thick and fleshy, having very tiny flowers clustered on it

Araucaria

Araucaria has a graceful pyramidal shape with graceful, wide-spaced branches symmetrically arranged in whorled,¹⁰ horizontal tiers around a single straight trunk. There are typically five branches per whorl. Araucaria propagates well from both cuttings and seeds. It grows throughout the year. Figure 47 shows Araucaria indoor plant.

Figure 47: Araucaria Indoor Plant



Money Plant

Money Plant is an evergreen plant with thick, waxy, green, heart-shaped leaves with splashes of yellow. Money plant is one of the best indoor plants that helps to purify the room air and brings outdoor freshness inside. As a houseplant, it is commonly grown as a hanging plant. These leaves are green in color and shiny in appearance. Money plant can be propagated and grown easily from stem cutting. It grows throughout the year. Figure 48 shows money plant.

Figure 48 : Money Plant



Cactus Plants Considered in the Proposed Project

¹⁰ A whorl or verticil is an arrangement of leaves, sepals, petals, stamens, or carpels that radiate from a single point and surround or wrap around the stem or stalk.

For the proposed project, the following cactus plants have been considered, based on the popularity of these cacti in Pakistan. As per research, cactus needs shed for its proper maintenance. In the proposed project, benches are used for placing cactus plant in nursery.

Gymnocalycium

Gymnocalycium are cacti that always look good on a terrace. The flowers they produce are some of the most beautiful of all cacti. Its flowers are white or pink, and sprout from the top of the cactus. Gymnocalycium can be propagated by the offsets it produces. Gymnocalycium main growing season is from mid to late spring into early summer. Gymnocalycium flowers freely in the spring and summer months. Figure 49 shows gymnocalycium cactus plant.

Figure 49: Gymnocalycium Cactus Plant



Astrophytum Asterias

Astrophytum Asterias (Sea-Urchin Cactus) is an extremely flat barrel cactus with unique and remarkably beautiful form and no typical covering of spines, but with tiny speckled tuft of hairs less than pinhead-sized. It is shaped like a dome with pronounced, albeit shallow, 5 to 8 green to brownish green ribs. It produces large yellow flowers with orange throats often larger than the plant itself. The common name comes from resemblance to sea urchin without spines. Astrophytum cacti propagate only by seed, which can be collected from the dried flowers. These seeds are fairly fragile and needs care while handling. The seeds have a fairly short shelf life and need to be planted quickly after harvesting to have a reasonable chance of rooting. This cactus blooms in the mid-summer season and produces pale yellow flowers. To keep the plant compact, water carefully from March to October. Figure 50 shows Astrophytum Asterias cactus plant.

Figure 50: Astrophytum Asterias Cactus Plant



Mammillaria

Mammillaria is a genus of flowering cactus and a popular houseplant. The rounded cactus is covered in small tubercles that sprout short fine needles. Cone-shaped pink flowers bloom from the top of the cactus in a crown arrangement. All have nipple-like tubercles with dimorphic areoles on the ends. The areoles, from which spines grow, can produce hair like or woolly spines that are either stiff or soft and in a range of colors. Mammillaria can easily propagate from the offsets that develop in clusters that form around the base of a mature plant. Mammillaria produces buds during one growing season and then go dormant through the winter and into the spring and early summer. After the first summer rain, the Mammillaria cactus open and gets blooming with flowers. Figure 51 shows Mammillaria cactus plant.

Figure 51: Mammillaria Cactus Plant



Cereus Night Blooming Cactus

The Cereus night blooming cactus is tall climbing. It is three ribbed and has black spines along green to yellow stems. Night blooming Cereus will not begin to flower until it is four or five years old and will begin with just a couple of flowers. The incidence of blooms will increase as the plant grows older. The bloom will only open at night and

is pollinated by a moth. The Cereus flower is a large white flower borne off the tops of the stems. Cereus cactus propagation by stem cuttings, is probably the most common and easiest route. Night blooming Cereus cactus flowers in both summer and autumn. Figure 52 shows Cereus Night Blooming cactus plant.

Figure 52: Cereus Night Blooming Cactus Plant



Succulent

Succulents are plants that store water in their stems, roots, and leaves. Succulents have green leaves, some kinds have shades of red, blue, purple, pink and orange. Succulents are generally small compact plants that make great houseplants that require little maintenance. Propagation of Succulents is easily done by cutting method. Many Succulents will form new plants from leaves which have been broken off. Most Succulent species tend to thrive in the temperate weather of the spring and fall. Most succulents can also be put into two categories i.e., summer growers and winter growers. Figure 53 shows succulent cactus plant.

Figure 53: Succulent Cactus Plant



Haworthia

Haworthia are particularly captivating due to their variety of shapes and colors. Being undemanding and easy to take care, they are extremely popular as houseplants. Haworthia is characterized by its rosette-shaped and tightly packed leafy cluster. Haworthia tend to be quite small and are always white in color. Cuttings represent the quickest and most common method of propagating Haworthia. Haworthia produces flowers from mid-spring to early summer and blooms white to pale-pink flowers. Figure 54 shows Haworthia cactus plant.

Figure 54: Haworthia Cactus Plant



Agave

Agave plants generally are with large leaves that end in spiny tips. There is a lot of variety in the Agave genus. There are large, stiff specimens that can grow to 10 feet or more in height and width. And then there are the small, dish-sized Agaves, as well as a few Agave species with soft leaves and no spines. Agave foliage tends toward a blue green in hardier varieties and a gray green in warm-climate varieties. Some are patterned with gold or white markings. Propagation of Agaves is a very simple procedure. Agaves can be successfully propagated by vegetative cutting. Spring or early fall are the best times to plant agaves. Figure 55 shows agave cactus plant.

Figure 55: Agave Cactus Plant



Procurement of Plants

The proposed retail nursery shop will procure plants (fruits, vegetables, flowers, indoor and cactus plants) from Pakistan's large suppliers, located in Pattoki, Kasur.

However, the proposed nursery may also procure its plants from the local suppliers which are located in all the major cities of Pakistan such as Lahore, Gujranwala, Islamabad, Multan, Rawalpindi, Sargodha, Peshawar and Karachi. The procured plants will be transported to the nursery by using rented transportation facilities. The received plants will be checked by the staff and in case any item is found to be damaged, it is returned to the supplier.

The proposed retail nursery will maintain inventory of plants for a period of half a month. The nursery is assumed to operate for 12 hours during weekdays. In the proposed project, business will purchase plants and seedlings of different ages from different suppliers. It will purchase 2 years old fruit plants, 20-25 days old vegetable seedlings, 3-4 months old seasonal flowers and 6-12 months old permanent flowers. Indoor plants purchased by the nursery will be around 6 months old and cactus plants around 12 months old.

Storing of Items Received

The staff will sort/segregate the procured plants based on plants' category, such as fruit, vegetable, flower, indoor and cactus. After sorting the plants, each category will be further allocated into sub-categories. The purchased plants are regularly maintained by the staff until sold to customer. During maintenance process, the staff will perform procedures necessary for the survival and growth of plants which included sufficient watering of plants, trimming and pruning (cutting dead part) and moving plants between different parts of nursery if needed.

Customer Dealing

The salesperson provides advice and assistance to the customers at every stage of buying process. After understanding the customer's requirements, the salesperson presents the customers with the available product options and guides them to make the right product choice.

Payment and Delivery

All the sales are made on a credit basis of 15 days. Usually, the customers transport plants on their own vehicles; however, if the customer demands plants can be delivered through loader rickshaw.

Return and Exchange

To meet the customer's expectations and to build goodwill among the customers, the proposed project also offers return and exchange options to its customers.

5.1. Installed and Operational Capacities

The proposed retail nursery shop will operate for 12 hours a day for 330 days in a year. The proposed project will sell different categories of plants and other products. The plants include fruits, vegetables, flowers, indoor plants and cactus and the other products includes clay (Mitti/Bhal), farmyard manure (Gobar Khaad), Urea, Di-Ammonium Phosphate (DAP), NPK, vegetable seeds, clay pots of 10-inch, 12-inch and 14-inch. The proposed unit has an annual capacity to sell 60,000 plants which includes 10,000 fruit plants, 13,000 vegetable plants, 20,000 flower plants, 12,000 indoor plants and 5,000 cactus plants and sell 10,680 units of other products which includes 1,200 50-kg bags of clay (Mitti/Bhal), 960 50-kg bags of farmyard manure (Gobar Khaad), 600 1-kg bags of Di-Ammonium Phosphate, 480 1-kg bags of urea, 480 1-kg bags of NPK, 2,400 packets of vegetable seeds, 1,800 10 inch clay pots, 1,560 12 inch clay pots and 1,200 14 inch clay pots at 100% selling capacity. The total production of the proposed unit is divided between 80% season and 20% offseason sale. This project is financed through 100% equity. The project is assumed to attain 70% capacity utilization in the first year of operations. The production capacity utilization is assumed to increase at a rate of 5% per annum to reach at a maximum of 90% in year 5. Table 1 shows sales assumptions for the proposed project.

At 70% capacity, the proposed unit will sell 49,476 plants which includes 7,000 fruit plants, 9,100 vegetable plants, 14,000 flower plants, 8,400 indoor plants and 3,500 cactus plants. Total sales of other products are 7,476 units which include 840 bags of clay (Mitti/ Bhal), 672 bags of farmyard manure (Gobar Khaad), 420 1-kg bags of Di-Ammonium Phosphate, 336 1-kg bags of Urea, 336 1-kg bags of NPK, 1,680 packets of vegetable seeds, 1,260 10-inch clay pots, 1,092 12-inch clay pots and 840 14-inch clay pots.

Table 2 shows selling capacity of fruits. Table 3 shows selling capacity of vegetable plants. Table 4 shows selling capacity of flower plants. Table 5 shows selling capacity of indoor plants. Table 6 shows selling capacity of cactus plants. Table 7 shows selling capacity of other products.

Table 1: Sale Assumptions

Products	Expected Sale Units Per Month @ 100%	Expected Sale Units Per Year @ 100%
Fruit Plants	833	10,000
Vegetable Plants	1,083	13,000
Flower Plants	1,667	20,000
Indoor Plants	1,000	12,000
Cactus plants	417	5,000
Total	5,000	60,000

Table 2: Selling Capacity of Fruits

Products	Expected Sale Units Per Month	Ratio (%)	Expected Sale Units Per Product/Month	Expected Annual Sale Units Per Product @100% Capacity	Expected Initial Year Sale Units Per Product @70% Capacity
Peach	833	7%	58	700	490
Persimmon (Japani Phal)		5%	42	500	350
Oranges		10%	83	1,000	700
Mulberry Fruits (Shahtoot)		5%	42	500	350
Pomegranate (Anaar)		7%	58	700	490
Mango		10%	83	1,000	700
Bananas		15%	125	1,500	1,050
Guava (Amrood)		8%	67	800	560
Plum (Aaloo Bukhara)		8%	67	800	560
Pear (Nashpati)		5%	42	500	350
Grape Fruit (Chakootra Phal)		10%	83	1,000	700
Lemon Tree		10%	83	1,000	700
Total (PKR)		100%		10,000	7,000

Table 3: Selling Capacity of Vegetables

Products	Expected Sale Units Per Month	Ratio (%)	Expected Sale Units Per Product/Month	Expected Annual Sale Units Per Product @100% Capacity	Expected Initial Year Sale Units Per Product @70% Capacity
Cabbage	1,083	10%	108	1,300	910
Cauliflower		5%	54	650	455
Tomato		15%	163	1,950	1,365
Green chilli		10%	108	1,300	910
Onion		10%	108	1,300	910
Radish (Mooli)		10%	108	1,300	910
Lady finger		5%	54	650	455
Carrot		10%	108	1,300	910
Cucumber		10%	108	1,300	910
Capsicum (shimla mirch)		5%	54	650	455
Spinach (Palak)		10%	108	1,300	910
Total (PKR)		100%		13,000	9,100

Table 4: Selling Capacity of Flowers

Products	Expected Sale Units Per Month	Ratio (%)	Expected Sale Units Per Product/Month	Expected Annual Sale Units Per Product @100% Capacity	Expected Initial Year Sale Units Per Product @70% Capacity
Pansy	1,667	10%	167	2,000	1,400
Tecoma		5%	83	1,000	700
Hibiscus		5%	83	1,000	700
Crape Jasmine (Chandni)		10%	167	2,000	1,400
Plumeria (Gulachin)		10%	167	2,000	1,400
Marigolds		10%	167	2,000	1,400
Rose		15%	250	3,000	2,100
Brunfelsia		8%	133	1,600	1,120
Jasmine		10%	167	2,000	1,400
Tulip		7%	117	1,400	980
Bougainvillea		5%	83	1,000	700
Gladiolus		5%	83	1,000	700
Total (PKR)		100%		20,000	14,000

Table 5: Selling Capacity of Indoor Plants

Products	Expected Sale Units Per Month	Ratio (%)	Expected Sale Units Per Product/Month	Expected Annual Sale Units Per Product @100% Capacity	Expected Initial Year Sale Units Per Product @70% Capacity
Golden Palm	1000	10%	100	1,200	840
Cane Palm		10%	100	1,200	840
Parlour Palm		4%	40	480	336
Ravenea Palm		4%	40	480	336
Lavender Palm		10%	100	1,200	840
Fish Tail Palm		4%	40	480	336
Draco Dracaena		10%	100	1,200	840
Aglaonema		10%	100	1,200	840
Dieffenbachia		10%	100	1,200	840
Peace lilly		10%	100	1,200	840
Lucky Bamboo		5%	50	600	420
Araucaria		5%	50	600	420
Money Plant		8%	80	960	672
Total (PKR)		100%		12,000	8,400

Table 6: Selling Capacity of Cactus Plants

Products	Expected Sale Units Per Month	Ratio (%)	Expected Sale Units Per Product/Month	Expected Annual Sale Units Per Product @100% Capacity	Expected Initial Year Sale Units Per Product @70% Capacity
Gymnocalycium	417	10%	42	500	350
Astrophytum Asterias		15%	63	750	525
Mammillaria		15%	63	750	525
Cereus Night Blooming		15%	63	750	525
Succulents		20%	83	1,000	700
Haworthia		15%	63	750	525
Agave		10%	42	500	350
Total (PKR)		100%		5,000	3,500

Table 7: Selling Capacity of Other Products

Products	Unit of Measurment	Expected Sale Units Per Month	Expected Sale Units Per Year @100%	Expected Sale Units Per Year @70%
Mitti Bhal (50 Kg Sack)	Kg	100	1,200	840
Gobar Khad (50 Kg Sack)	Kg	80	960	672
Di-ammonium Phosphate (DAP) (1-Kg Bag)	Kg	50	600	420
Urea White (1 Kg Bag)	Kg	40	480	336
NPK (1 Kg Bag)	Kg	40	480	336
Vegetable Seeds (Packets)	Packets	200	2,400	1,680
Clay Pots (10")	Units	150	1,800	1,260
Clay Pots (12")	Units	130	1,560	1,092
Clay Pots (14")	Units	100	1,200	840
Total (PKR)		890	10,680	7,476

6. CRITICAL FACTORS

Before making the decision to invest in Plant Nursery business, one should carefully analyze the associated risk factors. Important factors to be considered are as follows:

- Proper selection of plant nursery site based on factors such as soil workability and drainage, soil texture, water supply, land cost, climate, and soil depth
- Cost efficiency through better management
- Maintenance and control of internal temperature and humidity
- Networking with other growers and farmers from all over the country would be necessary to meet any excess requirement or shortfall
- Consistent quality of plants with complete knowledge of plant variety
- Availability of skilled manpower

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Successful nurseries are usually located in convenient areas where people can stop on their way home from work, often near urban areas. For establishing plant nurseries, availability of adequate space, dependable source of water and labor in the potential areas should be carefully ensured before proceeding with the proposed project.

The proposed project will be established in larger cities like Karachi, Lahore, Gujranwala, Islamabad, Multan, Rawalpindi, Sargodha, Quetta, Peshawar, Sialkot, Hyderabad, etc. due to the availability of area with proper water, soil and human resource. The main reason for the selection of these cities is the availability of target customers in abundance.

As per Punjab Forest Department, there are 244¹¹ nurseries in Punjab. As per Sindh Forest Department, there are around about 47¹² nurseries in Sindh. However, these numbers only include the larger and more formal nurseries and in addition to these, there are hundreds of nurseries available in both the provinces. There are large numbers of nurseries in Balochistan and Khyber Pakhtunkhwa also.

8. POTENTIAL TARGET MARKETS/CUSTOMERS

Over the years, nurseries have emerged as prime source of flower plants, fruit plants, vegetable plants, ornamental plants and medicinal and aromatic plants, besides the agricultural crop plants. Thus, the nurseries promote non-conventional agriculture and offer good profitability to the investors.

Kitchen gardeners, fruit or vegetable growers, orchard garden, small, medium and large-scale farmers in the markets of large cities like Karachi, Lahore, Gujranwala,

¹¹ <https://fwf.punjab.gov.pk/system/files/List%20of%20Nurseries%20Forest%20Department%20Punjab.pdf>

¹² <https://sindhforests.gov.pk/page-public-forest-nurseries>

Islamabad, Multan, Rawalpindi, Sargodha, Quetta, Peshawar, Sialkot etc. are the major markets for nursery business. Another way of categorizing the target market for plant nursery is looking at three segments, including “Residential Homeowners” “Commercial Contractors”¹³ and “Renters”. The primary marketing opportunity is selling to these accessible target market segments that focus on the beautification of peoples’ homes and places of business.

Due to change in lifestyle of the people as well as growing real estate, event management, hotel and restaurant businesses in the country, demand for various floriculture, ornamental nursery products has increased manifold during the past two decades. Demand has also risen due to globalization; since masses have become more familiar with role of plants in daily life to fulfill their aesthetic needs. Pakistan is blessed with suitable environmental conditions for growing large variety of fruits, vegetables, flowers and other types of plants. Proper planning with involvement of public/private sector can fulfill the local demand of nursery products. Looking at the global trends and Pakistan’s suitable environment to produce large variety of nursery plants, the Planning Commission of Pakistan (PCP) has decided to make nursery a modern, sustainable, and profit-driven sector which can not only meet the needs of the local fruits and floriculture industries and local consumers demand for ornamental plants, but also generate employment, income, and foreign exchange earnings for all the stakeholders in the nursery value chain.

The potential of plant nursery is evident from the following facts:

- Government of Balochistan plans to plant 10 million trees during the year 2022.¹⁴
- Pakistan plans to plant 500 million new trees in drive against climate change by mid-2023 to mitigate the effects of climate change.¹⁵

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of the Plant Nursery. Various costs and revenue related assumptions along with results of the analysis are outlined in this section.

The projected Income Statement, Cash Flow Statement and Balance Sheet are attached as annexure of this document.

All the figures in this financial model have been calculated after carefully considering the relevant assumptions and target market.

¹³ A company that supplies materials and workers for buildings that are used for business activities.

¹⁴ <https://www.aboutpakistan.com/news/balochistan-govt-to-plant-10-million-trees-during-2022>.

¹⁵ https://www.voanews.com/a/south-central-asia_pakistan-plants-500-million-new-trees-drive-against-climate-change/6196767.html

9.1. Project Cost

Table 8 provides fixed and working capital requirements for establishment and operations of the Plant Nursery.

Table 8: Project Cost

Description of Costs	Amount (PKR)	Reference
Land	-	9.1.1
Building Construction Cost	2,233,508	9.1.2
Furniture & Fixtures	249,000	9.1.3
Office Vehicles	430,000	9.1.4
IT Equipment	551,900	9.1.5
Tool and Equipments	272,700	9.1.6
Pre-operating Costs	329,845	9.1.7
Security against building	960,000	9.1.8
Total Capital Cost	5,026,953	
Working Capital Cost		
Cash	500,000	
Total Working Capital	500,000	
Total Project Cost	5,526,953	

9.1.1. Land

The proposed business of plant nursery will be established in a rented land. Suitable location for setting up a plant nursery business can be easily found on rent. Total space requirement for the proposed unit has been estimated as 7,000 sq. feet (1.56 Kanal). The breakup of the space requirement is provided in Table 9.

Table 9: Breakup of Space Requirement

Description	% Break-Up	Area Sq. Ft.
Office Area	3.3%	230
Fruit Plant Area	13%	875
Vegetable Plant Area	13%	875
Flowers Area	19%	1,320
Indoor Plants Area	14%	960
Cactus Plant Area	10%	700
Underground Water Tank Area	1.1%	80
Storage Area-Other Products	15%	1,080

Pavement	11%	800
Washrooms	1.1%	80
Total	100%	7,000

9.1.2. Building

The proposed business will be started in a rented land but the building will be constructed on the land. The proposed project requires electricity load of around 3.3 KW for which an electricity connection under the Commercial General Supply Tariff three phase will be required. Table 10 provides details of building construction cost.

Table 10: Building Construction Cost

Cost Item	Area (Sq. Ft)	Cost/Unit (PKR)	Total Cost (PKR)
Office	230	2,000	460,000
Underground Water Tank	80	4,000	320,000
Washrooms	80	2,000	160,000
Shed			1,293,508
Total			2,233,508

Table 11: Shed

Cost Item	No. of Sheds	Length	Width	Area Required for Shed (Sq.ft)	Total Area (sq.ft)	No. of Roof Pipes (L)	No. of Roof Pipes (W)	No. of Pole Pipes (L)	No. of Pole Pipes (W)
Shed for Indoor Plant Area	1	30	32	960	960	2	2	3	4
Shed for Cactus Area	1	25	28	700	700	2	2	3	4
Shed for Storage Area- Other Products	1	27	40	1,080	1,080	2	3	3	5
Total	3				2,740	5	7	8	13

Table 12: Shed Cost

Description	Number Area/Length	Per Sq. Feet/feet	Cost (PKR)
Green Net Shade sheet	2,740	120	328,800
Greenhouse Clear Plastic Polyethylene	2,740	180	493,200
Galvanized Iron Pipe	430	720	309,888
Civil Works (Polls Foundation)- Material cost	248	550	136,620
Labour- Installation			18,000
Labour- Polls Civil Works			7,000
Total			1,293,508

Table 13: Labor-Installation

Labour- Instalation	Number	Per day (PKR)	Number of days	Total Cost (PKR)
Skilled	1	3,000	3	9,000
Unskilled	3	1,000	3	9,000
Total				18,000

Table 14: Labor-Civil Works

Labour- Civil Works	Number	Per day (PKR)	Number of days	Total Cost (PKR)
Skilled	1	2,500	2	5,000
Unskilled	3	1,000	2	2,000
Total				7,000

Table 15: Galvanized Iron Pipe

Description	Total Area (Sq.ft)	Length per pipe (Feet)	Number of Pipes	Total Length
Galvanized Iron pipe (40 mm dia , 4 mm thickness)-Pool	2,740	12	21	248
Galvanized Iron Pipe (32 mm, 4 mm Thickness)-Roof		15	12	182
Total				430

9.1.3. Furniture & Fixtures Requirement

Table 16 provides details of the furniture and fixture requirement of the project.

Table 16: Furniture and Fixtures Requirement

Cost Item	Number of Items	Unit Cost (PKR)	Total Cost (PKR)
Executive Table	1	60,000	60,000
Executive Chair	1	30,000	30,000
Staff Chairs	10	13,500	135,000
Plastic Chairs	12	2,000	24,000
Total			249,000

9.1.4. IT Equipment Requirement

Details of IT equipment required for the project is provided in Table 17.

Table 17: IT Equipment Requirement

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Laptop	2	150,000	300,000
Desktop Computer	1	75,000	75,000
Printer	1	50,000	50,000
LED / LCD Monitor 23" (Surveillance)	1	40,000	40,000
Water Dispenser	1	24,000	24,000
Pedestal Fan	2	10,700	21,400
WIFI Router and Connection	1	3,500	3,500
Security Cameras - 2MP	8	3,000	24,000
Digital Video Recorder (DVR)	1	14,000	14,000
Total			551,900

9.1.5. Office Vehicle Requirement

Details of office vehicle required for the project is provided in Table 18.

Table 18: Office Vehicle Requirement

Cost Item	Number of Vehicles	Unit Cost (PKR) (A)	Registration and Plate Charges (B)	Total Cost (PKR) (A+B)
Motorcycle	1	111,500	6,500	118,000
Loader Rickshaw	1	300,000	12,000	312,000
Total Cost (PKR)		411,500	3,550	430,000

9.1.6. Tool and Equipment

Details of tool and equipment for the project are provided in Table 19.

Table 19: Tool and Equipment

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Kurpa	10	180	1,800
Ramba	10	600	6,000
Spade	8	700	5,600
Shovel	5	600	3,000
Wheel Barrows	10	6,000	56,000
Watering Can (10 Liter)	8	600	4,800
Nursery Benches (10'x4')	10	16,000	160,000
PVC Hose Pipes (50ft)	4	3,000	12,000
Lopping Shears	2	1,500	3,000
Gardening Gloves	5	500	2,500
Water Suction Pump (1.5 Hp)	1	18,000	18,000
Total (PKR)			272,700

9.1.7. Pre-Operating Cost

Details of pre-operating cost for the project are provided in Table 20.

Table 20: Pre-Operating Cost

Cost Item	Number/ Months	Hiring before Year 0	Unit Cost (PKR)	Total Cost (PKR)
Nursery Supervisor	1	1	60,000	60,000
Labour Skilled-Gardener	1	1	30,000	30,000
Unskilled Labor	1	1	25,000	25,000
Office boy	1	1	25,000	25,000
Security Guard	1	1	25,000	25,000
Utilities expense				14,845
Boring Cost				150,000
Total Cost				329,845

9.1.8. Security Against Building

Details of security against building for the project are provided in Table 21.

Table 21: Security Against Building

Cost Item	Months	Rent per Month(PKR)	Total Cost (PKR)
Security Against Building	3	320,000	960,000
Total			960,000

9.2. Breakeven Analysis

Details are shown in Table 22.

Table 22: Breakeven Analysis

Particulars	Amount First Year (PKR)	Profitability Ratio
Sales	32,536,155	100%
Variable Cost	22,470,473	69%
Contribution	10,065,682	31%
Fixed Cost	6,489,046	23%
Breakeven		

Breakeven (Plants)	31,896
Breakeven Revenue (PKR)	20,975,094
Breakeven Capacity	45%

9.3. Revenue Generation

Table 23 provides details for revenue generation of plant nursery during the 1st year of operations, based on 70% capacity utilization.

Table 23: Total Revenue Generation

Particular	Amount (PKR)
Fruit plants	
Season	3,073,490
Off Season	768,373
Total – Fruit Plants	3,841,863
Vegetable Plants	
Season	1,137,197
Off Season	284,299
Total – Vegetable Plants	1,421,496
Flower plants	
Season	8,970,920
Off Season	2,242,730
Total – Flower Plants	11,213,650
Indoor Plants	
Season	6,148,912
Off Season	1,537,228
Total – Indoor Plants	7,686,140
Cactus Plant	
Season	5,735,625
Off Season	1,433,906
Total – Cactus Plants	7,169,531
Revenue from Plants (PKR)	31,332,680
Revenue from Other Products (PKR)	1,203,475
Total Revenue (PKR)	32,536,155

Table 24: Category Wise - Revenue Generation – Fruit Plants

Cost Item	Unit Sold in Year 1	Sale Price/Unit (PKR)	Amount (PKR)
Peach	470	520	244,183
Persimmon (Japani Phal)	335	530	177,771
Oranges	671	630	422,625
Mulberry Fruits (Shahtoot)	335	520	174,417
Pomegranate (Anaar)	470	580	272,358
Mango	671	1,050	704,375
Bananas	1,006	520	523,250
Guava (Amrood)	537	470	252,233
Plum (Aaloo Bukhara)	537	420	225,400
Pear (Nashpati)	335	520	174,417
Grape Fruit (Chakotra Phal)	671	480	322,000
Lemon Tree	671	520	348,833
Total	6,708		3,841,863

Table 25: Category Wise - Revenue Generation – Vegetable Plants

Cost Item	Unit Sold in Year 1	Sale Price/Unit (PKR)	Amount (PKR)
Cabbage	872	120	104,650
Cauliflower	436	210	91,569
Tomato	1,308	210	274,706
Green chilli	872	210	183,138
Onion	872	130	113,371
Radish (Muli)	872	160	139,533
Lady finger	436	120	52,325
Carrot	872	160	139,533
Cucumber	872	170	148,254
Capsicum (shimla mirch)	436	120	52,325
Spinach (Palak)	872	140	122,092

Total	8,721		1,421,496
--------------	--------------	--	------------------

Table 26: Category Wise - Revenue Generation – Flower Plants

Cost Item	Unit Sold in Year 1	Sale Price/Unit (PKR)	Amount (PKR)
Pansy	1,342	310	415,917
Tecoma	671	520	348,833
Hibiscus	671	530	355,542
Crape Jasmine (Chandni)	1,342	520	697,667
Plumeria (Gulachin)	1,342	530	711,083
Marigolds	1,342	1,900	2,549,167
Rose	2,013	1,850	3,723,125
Brunfelsia	1,073	530	568,867
Jasmine	1,342	520	697,667
Tulip	939	470	441,408
Bougainvillea	671	420	281,750
Gladiolus	671	630	422,625
Total	13,417		11,213,650

Table 27: Category Wise - Revenue Generation – Indoor Plants

Cost Item	Unit Sold in Year 1	Sale Price/Unit (PKR)	Amount (PKR)
Golden Palm	805	550	442,750
Cane Palm	805	550	442,750
Parlour Palm	322	660	212,520
Ravenea Palm	322	660	212,520
Lavender Palm	805	495	398,475
Fish Tail Palm	322	440	141,680
Draco Dracaena	805	660	531,300
Aglaonema	805	1,100	885,500
Dieffenbachia	805	1,980	1,593,900
Peace lilly	805	1,980	1,593,900
Lucky Bamboo	403	820	330,050

Araucaria	403	830	334,075
Money Plant	644	880	566,720
Total	8,050		7,686,140

Table 28: Category Wise - Revenue Generation – Cactus Plants

Cost Item	Unit Sold in Year 1	Sale Price/Unit (PKR)	Amount (PKR)
Gymnocalycium	335	1,000	335,417
Astrophytum Asterias	503	2,500	1,257,813
Mammillaria	503	1,500	754,688
Cereus Night Blooming	503	2,500	1,257,813
Succulents	671	2,000	1,341,667
Haworthia	503	750	377,344
Agave	335	5,500	1,844,792
Total	3,354		7,169,531

Table 29: Seasonal Distribution for Revenue

Sales	Ratio
Season	80%
Off Season	20%

Table 30: Other Products-Revenue

Cost Item	Unit Sold in Year 1	Sale Price/Unit (PKR)	Amount (PKR)
Mitti Bhal (5 Ton)	805	200	161,000
Gobar Khad (4 Ton)	644	150	96,600
Di-ammonium Phosphate (DAP) (50 Kg Sack)	403	300	120,750
Urea White (40 Kg Sack)	322	100	32,200
NPK (40 Kg Sack)	322	300	96,600
Vegetable Seeds (Packets)	1,610	50	80,500
Clay Pots (10")	1,208	150	181,125
Clay Pots (12")	1,047	200	209,300

Clay Pots (14")	805	280	225,400
Total	7,165		1,203,475

9.4. Variable Cost Estimate

Variable cost details are given in Table 31.

Table 31: Variable Cost Estimate

Cost Item	Total Cost (PKR)
Cost of Sales	18,573,837
Direct Labor	3,300,000
Packing Cost	35,700
Indirect Utilities	178,136
Communications expense (phone, fax, mail, internet, etc.)	139,200
Office vehicles running expense	104,400
Office expenses (stationary, entertainment, janitorial services, etc.)	139,200
Total	22,470,473

Table 32: Total Cost of Sale

Description	Sales (PKR)	Profit Margin (%)	Cost of Sales (PKR)
Cost of Sale – Fruit	3,841,863	40%	2,305,118
Cost of Sale – Vegetable	1,421,496	40%	852,898
Cost of Sale – Flower	11,213,650	40%	6,728,190
Cost of Sale – Indoor Plant	7,686,140	50%	3,843,070
Cost of Sale – Cactus Plant	7,169,531	45%	3,943,242
Cost of Sale (PKR)	31,332,680		17,672,517
Cost of Other Products			901,320
Total (PKR)			18,573,837

Table 33: Direct Labor

Post	No. of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Nursery Supervisor	1	60,000	720,000
Skilled Labor - Gardener	3	30,000	1,080,000

Unskilled Labor	5	25,000	1,500,000
Total Direct Labor Cost (PKR)			3,300,000

Table 34: Packing Cost

Cost Item	Average Annual Number of Sacks	Unit Cost (PKR)	Total Cost (PKR)
PP Woven Sacks (Bori 50 kg)	2,160	20	43,200
Polythene bag of 1kg	1,560	5	7,800
Total Cost @100%			51,000
Total Cost @70%			35,700

Table 35: Variable cost Assumptions

Description of Costs	Rate	Rationale
Communications expense (phone, mail, internet, etc.)	8%	of management expense
Office vehicles running expense	6%	of management expense
Office expenses (stationery, entertainment etc.)	8%	of management expense

9.5. Fixed Cost Estimate

Fixed Cost details are given in Table 36.

Table 36: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Management Staff	1,740,000
Nursery Land Rental Expense	3,840,000
Promotional expense	325,362
Depreciation expense	517,716
Amortization of pre-operating costs	65,969
Total Fixed Cost	6,489,046

Table 37: Staff Salaries

Post	No. of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Sales & Marketing Officer	1	40,000	480,000

Procurement Officer	1	30,000	360,000
Office Boy	1	25,000	300,000
Security Guard	2	25,000	600,000
Total Cost (PKR)			1,740,000

Table 38: Fixed Cost Assumptions

Description of Costs	Rate	Rationale
Promotional Expense	1%	of Revenue
Depreciation		
Building	10%	of Building Renovation Cost
Tool and Equipment	20%	of Cost
IT Equipment/Office Vehicle/Furniture and Fixture	15%	of Cost

9.6. Financial Feasibility Analysis

The financial feasibility analysis provides the information regarding projected Internal Rate of Return (IRR), Net Present Value (NPV) and Payback period of the study, which is shown in Table 39.

Table 39: Financial Feasibility Analysis

Description	Project
IRR	80%
NPV (PKR)	22,035,109
Payback Period (years)	1.85
Projection Years	10
Discount rate used for NPV	25%

9.7. Financial Feasibility Analysis with 50% Debt

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the study on the basis of Debt: Equity Model (50:50) with the interest rate of KIBOR+3%, which is shown in Table 40.

Table 40: Financial Feasibility Analysis with 50% Debt

Description	Project
IRR	78%
NPV (PKR)	25,880,711

Payback Period (years)	1.92
Projection Years	10
Discount rate used for NPV	35%

9.8. Human Resource Requirement

For the 1st year of operations, the human resource requirements are projected in Table 41.

Table 41: Human Resource Requirements

Description	Number of Employees	Salary Per Month Per Resource (PKR)	Annual Salaries
Nursery Supervisor	1	60,000	720,000
Sales & Marketing Officer	1	40,000	480,000
Procurement Officer	1	30,000	360,000
Skilled Labor	3	30,000	1,080,000
Labor Unskilled	5	25,000	1,500,000
Office Boy	1	25,000	300,000
Security Guard	2	25,000	600,000
Total			5,040,000

10. CONTACT DETAILS

In order to facilitate the potential investors, contact details of some relevant vendors to the proposed project is given in Table 42.

Table 42: Contact Details

Name of supplier	Origin	Email/ Website	Contact Number
Faizan Nursery Farms	Lahore	http://www.faizanfarms.com/	0346 4131798
Karachi Plants	Karachi	https://www.karachiplants.com/default/	0336 5752687
Green acres nursery	Peshawar	https://green-acres-nursery.business.site/	0301 8907310
Shabnum Flowers Nursery	Quetta	https://www.facebook.com/ShabnumNursery/	0335 2591190
Gulshan-e-Waqar Nursery Farms	Pattoki, Kasur	https://gulshan-e-waqar-nursery-farms-pattoki.business.site/	0333 4181981
Makkah Nursery Farm	Islamabad	https://www.facebook.com/makkahnursery	0300 5326195
Madina Nursery	Sargodha		0300 9607020
Eid Gah Plant Nursery	Multan		0301 7742012
Flora Nursery	Rawalpindi		0300 5535940
Evergreen Nursery	Faisalabad	https://www.facebook.com/eqn.fsd	0300 6636815
Kisan Nursery	Gujranwala		0305 4296085
New Bolan Nursery	Dera Ghazi Khan	https://bolan-nursery.business.site/	0344 7222456
Paradise Nursery	Bahawalpur		0300 2219830

11. USEFUL LINKS

Table 43: Useful Links

Name of Organization	Website
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Federal Board of Revenue	www.fbr.gov.pk
Government of Punjab	https://punjab.gov.pk/
Government of KPK	https://kp.gov.pk/
Government of Sindh	www.sindh.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Agricultural Department of Punjab	www.agripunjab.gov.pk
Agricultural Department of Sindh	www.agri.sindh.gov.pk
Agricultural Department of Balochistan	www.balochistan.gov.pk/agri/
Agricultural Department of Khyber Pakhtunkhwa	www.agriculture.kp.gov.pk
Agricultural Department of Gilgit Baltistan	www.facebook.com/ALWF.gog.pk
Agricultural Department of Azad Jammu & Kashmir	www.agricultureajk.org
Punjab Forest Department	www.punjab.gov.pk/forest_department
Khyber Pakhtunkhwa Forest Department	www.few.kp.gov.pk/
Sindh Forest Department	www.sindhforests.gov.pk
Punjab Horticulture Authority	www.pha.gop.pk

12. ANNEXURES

12.1. Income Statement

Calculations										
Income Statement										SMEDA
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Fruit Plants	3,841,863	4,724,501	5,559,500	6,516,387	7,611,413	8,414,867	9,281,598	10,237,603	11,292,076	12,455,160
Vegetable Plants	1,421,496	1,748,073	2,057,025	2,411,075	2,816,236	3,113,515	3,434,208	3,787,931	4,178,088	4,608,431
Flower Plants	11,213,650	13,789,899	16,227,100	19,020,068	22,216,234	24,561,361	27,091,182	29,881,573	32,959,375	36,354,191
Indoor Plant Plants	7,686,140	9,451,971	11,122,495	13,036,871	15,227,610	16,835,024	18,569,031	20,481,641	22,591,250	24,918,149
Cactus Plants	7,169,531	8,816,675	10,374,918	12,160,623	14,204,116	15,703,491	17,320,950	19,105,008	21,072,824	23,243,325
Other Products Revenue	1,203,475	1,479,964	1,741,530	2,041,278	2,384,298	2,635,982	2,907,489	3,206,960	3,537,277	3,901,616
Total Revenue	32,536,155	40,011,083	47,082,569	55,186,303	64,459,906	71,264,240	78,604,457	86,700,716	95,630,890	105,480,872
<i>Cost of Sales</i>										
Plants										
Fruit Plants	2,305,118	2,834,700	3,335,700	3,909,832	4,566,848	5,048,920	5,568,959	6,142,562	6,775,246	7,473,096
Vegetable Plants	852,898	1,048,844	1,234,215	1,446,645	1,689,742	1,868,109	2,060,525	2,272,759	2,506,853	2,765,059
Flower Plants	6,728,190	8,273,939	9,736,260	11,412,041	13,329,741	14,736,817	16,254,709	17,928,944	19,775,625	21,812,515
Indoor Plant	3,843,070	4,725,985	5,561,247	6,518,435	7,613,805	8,417,512	9,284,515	10,240,821	11,295,625	12,459,074
Cactus Plants	3,943,242	4,849,171	5,706,205	6,688,343	7,812,264	8,636,920	9,526,523	10,507,754	11,590,053	12,783,829
Other Products	901,320	965,700	1,030,080	1,094,460	1,158,840	1,158,840	1,158,840	1,158,840	1,158,840	1,158,840
Total Cost of Sales	18,573,837	22,698,341	26,603,708	31,069,756	36,171,238	39,867,118	43,854,070	48,251,679	53,102,242	58,452,412
Direct Labor	3,300,000	3,620,100	3,971,250	4,356,461	4,779,038	5,242,604	5,751,137	6,308,997	6,920,970	7,592,304
Packing Cost	35,700	38,250	40,800	43,350	45,900	45,900	45,900	45,900	45,900	45,900
Total cost of sales	21,909,537	26,356,691	30,615,757	35,469,567	40,996,176	45,155,622	49,651,107	54,606,576	60,069,112	66,090,616
Gross Profit	10,626,617	13,654,393	16,466,811	19,716,735	23,463,730	26,108,618	28,953,350	32,094,140	35,561,778	39,390,256
<i>General administration & selling expenses</i>										
Management Staff	1,740,000	1,908,780	2,093,932	2,297,043	2,519,856	2,764,282	3,032,418	3,326,562	3,649,239	4,003,215
Nursery Land Rental Expense	3,840,000	4,224,000	4,646,400	5,111,040	5,622,144	6,184,358	6,802,794	7,483,074	8,231,381	9,054,519
Electricity	178,136	192,209	207,393	223,777	241,455	260,530	281,112	303,320	327,282	353,138
Communications expense (phone, fax, mail, internet, etc.)	139,200	152,702	167,515	183,763	201,588	221,143	242,593	266,125	291,939	320,257
Office vehicles running expense	104,400	114,527	125,636	137,823	151,191	165,857	181,945	199,594	218,954	240,193
Office expenses (stationary, entertainment, etc.)	139,200	152,702	167,515	183,763	201,588	221,143	242,593	266,125	291,939	320,257
Promotional expense	325,362	400,111	470,826	551,863	644,599	712,642	786,045	867,007	956,309	1,054,809
Depreciation expense	517,716	517,716	517,716	517,716	578,828	610,539	576,589	713,554	801,733	801,733
Amortization of pre-operating costs	65,969	65,969	65,969	65,969	65,969	-	-	-	-	-
Subtotal	7,049,982	7,728,716	8,462,900	9,272,757	10,227,220	11,140,495	12,146,090	13,425,361	14,768,777	16,148,121
Operating Income	3,576,635	5,925,677	8,003,911	10,443,978	13,236,511	14,968,123	16,807,260	18,668,779	20,793,002	23,242,135
Gain / (loss) on sale of office equipment	-	-	-	275,950	-	-	-	508,554	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	107,500	-	-	-
Earnings Before Interest & Taxes	3,576,635	5,925,677	8,003,911	10,719,928	13,236,511	14,968,123	16,914,760	19,177,333	20,793,002	23,242,135
Subtotal	-	-	-	-	-	-	-	-	-	-
Earnings Before Tax	3,576,635	5,925,677	8,003,911	10,719,928	13,236,511	14,968,123	16,914,760	19,177,333	20,793,002	23,242,135
Tax	406,702	826,419	1,246,076	1,992,980	2,265,953	2,785,437	3,369,428	4,048,200	4,532,900	5,267,640
NET PROFIT/(LOSS) AFTER TAX	3,169,933	5,099,258	6,757,836	8,726,948	10,970,558	12,182,686	13,545,332	15,129,133	16,260,101	17,974,494

12.2. Balance Sheet

Calculations	SMEDA										
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	500,000	1,615,144	2,647,681	4,019,851	4,850,239	6,324,508	8,000,784	8,125,004	8,602,714	10,056,726	12,444,139
Accounts receivable	-	1,478,916	1,818,686	2,140,117	2,508,468	2,929,996	3,239,284	3,572,930	3,940,942	4,346,859	4,132,433
Inventory (Plants and Other Products)	-	807,558	948,399	1,111,382	1,297,754	1,510,632	1,661,130	1,827,253	2,010,487	2,212,593	2,435,517
Pre-paid Nursery land rent	-	352,000	387,200	425,920	468,512	515,363	566,900	623,589	685,948	754,543	-
Total Current Assets	500,000	4,253,618	5,801,965	7,697,270	9,124,973	11,280,499	13,468,097	14,148,776	15,240,091	17,370,721	19,012,090
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	2,233,508	2,010,157	1,786,806	1,563,456	1,340,105	1,116,754	893,403	670,052	446,702	223,351	(0)
Furniture & fixtures	249,000	211,650	174,300	136,950	99,600	62,250	24,900	473,013	402,061	331,109	260,157
Office vehicles	430,000	365,500	301,000	236,500	172,000	107,500	43,000	892,749	758,837	624,924	491,012
Office equipment	551,900	413,925	275,950	137,975	796,347	597,261	398,174	199,087	1,149,066	861,799	574,533
Tool and Equipment	272,700	218,160	163,620	109,080	54,540	431,259	345,007	258,755	172,503	86,252	682,010
Security against building	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000
Total Fixed Assets	4,697,108	4,179,392	3,661,676	3,143,961	3,422,592	3,275,023	2,664,484	3,453,657	3,889,168	3,087,435	2,967,712
<i>Intangible assets</i>											
Pre-operation costs	329,845	263,876	197,907	131,938	65,969	-	-	-	-	-	-
Total Intangible Assets	329,845	263,876	197,907	131,938	65,969	-	-	-	-	-	-
TOTAL ASSETS	5,526,953	8,696,886	9,661,548	10,973,168	12,613,534	14,555,522	16,132,581	17,602,432	19,129,259	20,458,156	21,979,802
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	5,526,953	5,526,953	5,526,953	5,526,953	5,526,953	5,526,953	5,526,953	5,526,953	5,526,953	5,526,953	5,526,953
Retained earnings	-	3,169,933	4,134,596	5,446,216	7,086,582	9,028,570	10,605,628	12,075,480	13,602,306	14,931,204	16,452,849
Total Equity	5,526,953	8,696,886	9,661,548	10,973,168	12,613,534	14,555,522	16,132,581	17,602,432	19,129,259	20,458,156	21,979,802
TOTAL CAPITAL AND LIABILITIES	5,526,953	8,696,886	9,661,548	10,973,168	12,613,534	14,555,522	16,132,581	17,602,432	19,129,259	20,458,156	21,979,802

12.3. Cash Flow Statement

Calculations	SMEDA										
Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		3,169,933	5,099,258	6,757,836	8,726,948	10,970,558	12,182,686	13,545,332	15,129,133	16,260,101	17,974,494
Add: depreciation expense		517,716	517,716	517,716	517,716	578,828	610,539	576,589	713,554	801,733	801,733
amortization of pre-operating costs		65,969	65,969	65,969	65,969	65,969	-	-	-	-	-
Accounts receivable		(1,478,916)	(339,769)	(321,431)	(368,352)	(421,527)	(309,288)	(333,646)	(368,012)	(405,917)	214,425
Finished goods inventory		(807,558)	(140,841)	(162,983)	(186,372)	(212,878)	(150,498)	(166,123)	(183,234)	(202,107)	(222,924)
Pre-paid building rent	-	(352,000)	(35,200)	(38,720)	(42,592)	(46,851)	(51,536)	(56,690)	(62,359)	(68,595)	754,543
Accounts payable		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	-	1,115,144	5,167,132	6,818,386	8,713,317	10,934,098	12,281,903	13,565,462	15,229,082	16,385,216	19,522,272
<i>Financing activities</i>											
Issuance of shares	5,526,953	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activities	5,526,953	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(5,026,953)	-	-	-	(796,347)	(431,259)	-	(1,365,762)	(1,149,066)	-	(682,010)
Cash (used for) / provided by investing activities	(5,026,953)	-	-	-	(796,347)	(431,259)	-	(1,365,762)	(1,149,066)	-	(682,010)
NET CASH	500,000	1,115,144	5,167,132	6,818,386	7,916,969	10,502,839	12,281,903	12,199,700	14,080,017	16,385,216	18,840,262

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 44: Operating Cost Assumptions

Description	Details
Furniture and fixture depreciation	15%
Tool and Equipment depreciation	20%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation rate	10.3%
Wage growth rate	9.7%
Gas price growth rate	7.9%
Electricity price growth rate	7.9%
Office equipment price growth rate	9.6%
Office vehicle price growth rate	11%

13.2. Revenue Assumptions

Table 45: Revenue Assumptions

Description	Details
Sale price growth rate	10.3%
Capacity Utilization	70%
Capacity Utilization Growth Rate	5%
Maximum Capacity	90%

13.3. Financial Assumptions

Table 46: Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate used for NPV (100% Equity)	25%

13.4. Debt-Related Assumptions

Table 47: Debt-Related Assumptions

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	50:50
Discount Rate	22%
Debt Tenure	5 years
Grace Period	1 Year
Interest Rate (KIBOR+3%)	19%

13.5. Cash Flow Assumption

Table 48: Cash Flow Assumptions

Description	Days
Accounts receivable cycle (in days)	15
Accounts payable cycle (in days)	-

Small and Medium Enterprises Development Authority

HEAD OFFICE

4th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road, Lahore
Tel: (92 42) 111 111 456, Fax: (92 42) 36304926-7

www.smeda.org.pk, helpdesk@smeda.org.pk

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
3 rd Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road Lahore, Tel: (042) 111-111-456 Fax: (042) 36304926-7 helpdesk.punjab@smeda.org.pk	5 TH Floor, Bahria Complex II, M.T. Khan Road, Karachi. Tel: (021) 111-111-456 Fax: (021) 5610572 helpdesk-khi@smeda.org.pk	Ground Floor State Life Building The Mall, Peshawar. Tel: (091) 9213046-47 Fax: (091) 286908 helpdesk-pew@smeda.org.pk	Bungalow No. 15-A Chaman Housing Scheme Airport Road, Quetta. Tel: (081) 831623, 831702 Fax: (081) 831922 helpdesk-qta@smeda.org.pk