

Dream and **Grow** it

'Starting your Gardening Hobby'

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The author takes no responsibility for any loss or damage of plants. Information provided here is based on primarily on experience and book reviews and therefore is subject to fluctuation.

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Gardening and its benefits

Gardening is a practice of growing plants for ornamental or other useful purposes. It is considered as one of the oldest hobbies in mankind and popular in any country, regardless of race, religion, language or geographic locations. Gardening has also been proven to have therapeutic and health benefits for people. It is an enjoyable form of exercise which encourages the use of motor skills such as bending, walking and reaching. Also, gardening stimulates interest in outdoor activities and social wellbeing with interactions between fellow gardeners. It also proven to reduce stress levels and promotes relaxation.



There are many different types of gardening, each with its own scale and specialty. In Singapore, the most common form of gardening is indoor or balcony gardening, which ranges from a few pots of plants to a small balcony garden. Others include outdoor gardening, community gardening, water gardening (aquascaping) and container gardening. Different types of gardening require different set of skills and knowledge. A gardener should know or gather information on these before starting out the hobby. Nonetheless, there are common skills that one must know in order to have a pleasant and successful gardening experience which we will discuss in this book.

Getting started: Know your plants

There are many plants you can grow in your garden and I am sure that you have a particular plant in mind that you wish to grow. Some people enjoy growing flowering plants which produce colourful blooms and pleasant fragrance. Others like to immerse themselves in greenery, growing foliage plants to add green to their daily lives. There are some others with special interests like gardening in offices or special groups of interesting plants.



Pitcher plants (Nepenthes) need special growing conditions!

Read up and do some research on plants that may interest you. As you read and see more plants, it gives you a clearer idea of their growing habits and requirements. Many people are not successful with gardening is mainly due to the lack of knowledge of plants. Some plants may require special care and growing conditions to survive and grow healthily. You may like tulips but you cannot grow them in a tropical climate here in Singapore!

Growing Conditions

Growing conditions are very important aspects gardeners must know. These conditions will determine whether your plants will grow well or not. Different plants have different growing requirements and providing them with the most appropriate conditions will give you a higher chance of success. The objective here is to provide a growing environment which is very close to what the plants have in the wild. A slightly different environment will give stress to the plants and therefore grow at a slower rate. It is impossible for us to create conditions that are similar in the wild, not even the top horticulturist in the world, but we try to give them the best that we can offer.



Capsicum plant fruiting in suitable growing conditions

There are five growing conditions that gardeners consider:

- 1) Sunlight
- 2) Temperature
- 3) Soil
- 4) Watering
- 5) Humidity

We will look at each of these growing conditions one by one.

Sunlight

One of the most important of aspect in gardening. As we all know plants need sunlight to make food, different plants have different sunlight requirements. Most flowering plants require more sunlight than other plants. Flowering plants such as bouganvillea, sunflowers, rose and Hibiscus require at least 5-6 hours of direct sunlight to grow well. Direct sunlight means under the Sun without any shelter or obstructions.



Bright light do not produce distinct shadows

Some of these plants can also be grown under bright light with occasional direct sunlight, but they may not do as well as those under direct sunlight. Bright light are generally reflected light from nearby buildings or walls. The intensity of light is not as blinding as direct sunlight, hence we determine it with the aid of shadows. Bright light do not produce shadows with clear silhouettes whereas direct sunlight give us the distinct shape of an object.

Shade loving plants, like foliage plants do best under bright light condition. The perception of shade or indoor plants is mistaken. Indoor plants still require sunlight to grow well and will only barely survive under florescent lights. Generally 6 tubes of florescent like is equivalent to only 8% of the Sun's energy!

Temperature

Singapore is a tropical country and therefore it is obvious that it is a haven for tropical plants. There are some other plants imported from temperate countries, which may not do well or even survive in our climate. Pansy, Fuchsia and Tulips are temperate plants which require full sunlight and yet at a low temperature. Only with a coolhouse, these plants can then survive in Singapore. Therefore knowing what are temperate plants is important too.



African Violets prefer lower temperature condition

Some other plants which require lower temperature to grow are highland plants. Some of these plants' natural habitats are found in tropical countries but in higher altitude mountainous areas. The distinct temperature drop at night is something which our tropical or lowland climate does not provide. Examples of highland plants include certain species of orchids and pitcher plants (Nepenthes).



Pansy is not suitable to grow in local climate

Soil

The correct use of soil or potting media is important too. The important things we look out for in soil are water drainage and amount of organic matter. Some plants require a more draining soil condition which water flows through it at a faster rate. This type of soil retains very small amount of water which do not soak the roots of the plants for a long duration. Plants like cacti and succulents and adeniums ('fu gui hua') prefer very draining media.

Other plants like water lily or Venus Flytrap prefer the 'wet feet' conditions. They are found in waterlogged areas like bogs and shallow ponds. Hence, we need the potting media to be wet at all times through various methods which we will discuss further in the later part of the book.

Most garden plants falls between these two categories. They prefer a draining media but also retains good amount of water. Therefore, we may need to mix different potting media or soil to achieve this characteristic.



Left to right: Burnt Soil, Mixed Soil with compost, Mixed Soil with Charcoal chips

Organic matter not only provides nutrients to the plants, it also plays a part in retaining water. Certain type of soil like burnt soil and sand have very little organic matter and most of the time we need to add compost, which is an organic matter to it. The readily available 'mixed soil' do contain compost and ready to use. Some plants can only be grown in nutrient-free soil, like carnivorous plants, and therefore require special potting media. The 'soil-less mix' do not contain organic matter too, which is used by some African Violets enthusiasts.



A miniature Sinningia on wick watering system

Watering

Watering is a common problem faced by many gardeners. Overwatering can result in water logged potting media and can cause complications like root rot. Underwatering can also kill plants. Hence, the knowledge of giving the right amount of water is essential. Cacti and succulents need very little water and flowering plants like sunflowers need a lot of water. Many had given advice on watering by the number of days (eg. once a day, twice a day), the more appropriate method is to water when the soil feels dry. Simply stick your finger into the soil and you will know whether it is time for watering. Again, different potting media and mixes have different water retention capabilities.

Humidity

Humidity is the hardest condition to satisfy, especially for apartment gardeners. It is the amount of water vapour in the surrounding air. Strong winds and other factors can result in extreme fluctuations of the humidity in your growing area. Tropical plants prefer higher humidity and their leaves will dry out if the humidity is too low. Therefore, we need to create humidity through different methods like growing plants next to one another or preventing wind from blowing directly at your growing area. Most plants can be acclimatised to a lower humidity through a gradual introduction to lower humidity.

By doing some research on the plants you are interested will enable you to know their growing conditions and whether these growing conditions can be satisfied in your growing environment. Good information sources are books and Internet sources such as blogs, forums and guides, but do take note that some of these growing conditions mentioned in foreign website do not represent in our tropical climate.



Pitcher plants prefer high humidity conditions

Your growing environment

With the knowledge of growing conditions, you are now good to assess your growing area. The growing area, or garden, must satisfy some of the growing conditions like sunlight and temperature. It is perfectly fine if your garden does not satisfy all, as some of the growing conditions can be created by various means. Listed below are some of the common growing areas:

- | | | |
|-----------------------|---------------------|-------------------|
| 1) Balcony / Corridor | 2) Windowsill | 3) Office Windows |
| 4) Garden | 5) High-rise Garden | 6) Terrariums |

The Balcony / Corridor

Balcony gardens can be set up to look extremely beautiful if appropriate plants are chosen. It is easy to maintain and cost effective. Take note of the duration of direct sunlight at your balcony, some balconies receive 4-6 hours of direct sunlight and can be ideal for sun loving plants. However most balconies have bright light and only direct sunlight during certain months of the year.



Renthiera singaporeanis orchid flowering in corridor condition

Depending on the height of the balcony, humidity will vary. Higher balconies experience more wind and humidity can fluctuate tremendously in such windy conditions. Some plants are unable to withstand such drastic changes and therefore unsuitable for these growing areas. Humidity problem can be reduced or solved by some means, like growing plants close to one another which trap and hinder air movements, or growing bigger plants to block some of the wind.



Bright windowsills and office windows are good for growing some unique plants

Windowsill

The windowsill growing area have similar conditions as the balcony. It may not receive as much sunlight, due to the height of the window which will restrict the sunlight from coming in. There are also some windows which do not receive much light which are obstructed by nearby buildings or walls. Therefore, not all windowsills are ideal growing areas.

The windowsill experience the same humidity problem as the balcony. However some windows with clear window panes can be closed and still allow the same amount of light to come in may solve the problem. Windows which frosted glass are installed do not have the same amount of light as the sunlight is dispersed in many directions.

Office Windows

Many of us keep small plants in our offices too. Offices can provide a good growing environment provided that there is good amount of sunlight at the windows. Air-conditioning helps to decrease the temperature and can be an ideal growing environment for some flowering plants. Humidity in the office is usually constant at around 60-70%, which is good enough for most plants.

However there are things to look out for. Direct sunlight can warm the growing area after long period of time, especially direct sunlight near noon. This could literally fry your plants! Ideally, plants can be grown in areas which receive morning or evening sunlight which is one of the best growing area we can have. With lower temperature and stable humidity, offices can act just like a coolhouse, keeping some plants that we cannot grow in our usual garden or balcony. But beware of office rules, when you are doing more gardening than work!

Garden

If you have a plot of open land and you want to start a garden, you will have a wide range of plants to choose from! Unlike other growing areas, a proper garden is spacious and enable you to grow bigger plants like shrubs and trees. Humidity level is quite stable but it can still be affected by wind. Doing a up a proper garden can be costly too. Bigger plants are generally more expensive and you may need additional equipments and installation like watering hose.



A Community Garden in Serangoon North

Also, the soil must be well conditioned before garden plants are introduced. The existing soil is usually too clayey and not beneficial to plants, therefore we need to mix compost to the soil. This will "open up" the soil, allowing better drainage and nutrient-abundant for your beautiful plants to grow in. Watering is relatively simple and you will get the hang of how much water is needed after certain period of time. The rule is to make sure the soil is moist but not too wet.

High-rise Garden

High-rise gardens are very similar to the usual gardens, the only difference is they are situated on buildings. Therefore, these places experience more wind than usual gardens. Different choice of plants is needed and must be properly planned. Although large plants can be grown, it is not advisable to grow plants with big or broad leaves. Their leaves can get lacerated or broken off by the strong winds and sometimes topple the entire plant!

Humidity issues must be taken care off if you are growing humidity loving plants. Taller plants or plants with a lot of leaves can block off some of the wind will minimise the fluctuation of the relative humidity. Also take note of the depth of the soil, do not grow any plants with can develop deep roots as this may restrict the plant's growth. Do check out with the building maintenance officers for further advice if you intend to grow big plants or trees.

Terrariums

Terrariums are miniature gardens done up in glass containers or tanks. Special knowledge are required to set up a terrarium. Unlike pots, terrariums do not have any drainage holes and therefore careful

watering is needed. Choice of plants are important too. Terrariums may look attracting but they need regular care and maintenance, which I do not recommend beginners to start out with.

As what we have discussed, no matter where you choose your growing area to be, growing conditions must be satisfied in order for the plants to survive. Always do some research and find out more about the plants ideal growing conditions before purchasing it. Many beginners fail because they do not know what they can grow or not. In many cases, we are unable to satisfy all growing conditions, most plants are quite forgiving and can still do well if 1 or 2 conditions are not met. They need time to acclimatise themselves to the new environment before they start to grow healthily. Start small and see how the plants react before embarking into a bigger garden project!

Things you need

With a clear idea of what your garden will be, we can now discuss about the equipments and things we will need. These are very useful equipments and they are affordable. Some can be even recycled materials from our daily household items. There are a huge range of similar equipments to choose from in our local nurseries and gardening stores.

Things we need:

- 1) Pots & Trays
- 2) Watering can / hose
- 3) Small shovel & Pruning Shears
- 4) Pot Racks /stands
- 5) Gardening soil
- 6) Fertilizers

Pots & Trays

There are many different shapes and sizes of pots available in nurseries and gardening stores. Based on how big the plant is and the size of your growing area, choose the correct size and shape of pot you want. Big plants like Chiku plant, Banana tree, Heliconias are recommended to be potted up in bigger and heavy clay pots. This will prevent them from drying out too quickly or overgrow their pot in a short period of time. They are still best to be planted in the ground which make good candidates in a typical garden.

Smaller plants can be potted up in 4-8 inch plastic pots. There are also square pots available and these square pots make better use of space than round pots when you need to grow them together! Containers like glass jugs or tin cans can be used as pots too. As there is no drainage holes at the bottom, we need to be extra careful with watering and make modifications in the potting media.

Trays generally serve to collect the drained water and keep the surroundings dry, there it is optional if you don't mind water flowing out. The stagnant water need to be cleared out to prevent mosquito breeding, so do check your trays regularly! Trays can also used as water reservoirs which the water in the tray will be drawn up into the soil by capillary action, hence keeping the soil wet at all times. This water tray method is used for growing some plants which prefer wet media condition.

Although clay pots and plastic pots are very similar, but they have differences too. Clay pots, especially the unglazed pots, are naturally porous. This will allow air particles to flow through the pot and into the potting media, also air from inside can flow out of the pot. This can possibly mean water content in the soil will drop with the pot is in the wind and over time, the soil will dry at a faster rate than those in plastic pots. Depending on the type of plants and watering habits of the gardeners, we make use of these different pots to help us in many ways.



Recycled bottles & mister

Watering can / hose

It is necessary to have a watering device to aid you in hydrating the plants efficiently. Garden hose will be very helpful in typical gardens with many plants and there is no need to carry heavy pails of water from the bathroom! For potted plants, you will probably need a water container to water your plants. Recycled bottles like soft drinks bottles or detergent bottle can be used for watering. It is not necessary to own a mister, misters are used to increase water content around the plants and keeping the top layer of the soil wet. This will help to increase humidity around the growing area. It is not an effective watering device for many potted plants as the water seldom reach the lower layers of the pots. Proper watering is to add water into the soil till water flows out of the pot. This will mean the soil has been thoroughly watered and as time goes by, you will know how much water is needed per watering.

Small Shovel & Pruning Shears

Shovels help us to scoop up loose soil efficiently than using our bare hands. For potted plants, a small shovel is needed and it can be used to for mixing soil. It can be made from recyclable materials too, cutting the upper portion of a plastic bottle provides you a cup shape shovel with a handle! Things will be made easier if you own a full sized shovel which helps you to plant big plants in the ground.



Pruning Shears are necessary too. Some branches are too thick to cut with normal scissors. Pruning helps to keep plants compact and removes diseased leaves and branches. Using the normal scissors which are used in many household chores can be contaminated with fungi and bacteria and we do not want the plants to get infected with these undesirable bugs.

Gardening Soil

Soil itself is a big topic by itself. There are numerous research and experiments done on soil by horticulturists and agriculturists. But here we will talk about the different kind of soils and mixes available here. Most tropical plants can be planted in soil which is 'ready mixed'. This 'mixed soil' is the widely available soil in the market. Different soil packers have added different media at different quantities for their 'mixed soil', but most of them are suitable for most plants available at the nurseries. Basic components of the 'mixed soil' are burnt soil, compost, wood shavings and sand. Some had added charcoal chips and orchid barks into the mix.

Some gardeners prefer to mix their own potting media. This enables them to control the water drainage capabilities and nutrient level of the mix which catered to their needs and also special care for specific plants. A typical and easy soil mix is the burnt soil with equal parts of compost. This particular mix is very suitable for many plants and with good nutrient level and drainage capability. Other potting media which gardeners use frequently are vermiculite, perlite, sphagnum moss, peat moss, coco peat. These media are "nutrient-free" media and mainly for specific plants or for propagation uses. Vermiculite and perlite are usually used for leaf or stem cuttings propagation, but they can be mixed with peat moss as a potting media. These grainy components open up the soil which allow aeration to take place.



Clockwise from bottom right: Sphagnum moss, Perlite, Peat Moss and Vermiculite

Peat moss, sphagnum moss and coco peat have very good water retention capabilities. Sphagnum moss itself can absorb 3-5 times of water than its own weight! They are nutrient-free and enable gardeners to control and monitor their regular feeding of fertilizers. The popular mix for carnivorous plants and african violets is the commonly known "soil-less" mix, which is made up of equal parts of vermiculite, perlite and peat moss.

Pot Racks

You probably need a rack to put your smaller plants and make the growing area neat and tidy. Stands and racks enable you to organise your plants and also prop up small plants higher to reach adequate sunlight. They come in various sizes and heights too. Some may come in a variety of colours to choose from!

Some gardeners prefer hanging plants, and they need hanging cords which are also available in most nurseries and stores. But bear in mind that there are some plants which do not do well in hanging pots as the humidity levels can fluctuate beyond their limits.

Fertilizers

Fertilizing your plants is an essential step for long lasting gardens. The main reason for fertilizing is to replenish the nutrients in the soil which had been depleted over a certain period of time. Potted plants as well as plants planted into the ground, need fertilizing very now and then. There are various kinds of fertilizers available in the market and choosing the appropriate fertilizers is important too. Fertilizers usually specify the NPK numbers. These numbers represent the percentage or proportion of the nutrient contents: Nitrogen (N), Phosphorous (P), Potassium (K). Each nutrient has its own benefits, Nitrogen helps plants to grow strong leaves, Phosphorous helps in the development of roots and flowers and Potassium for overall plant health.



Fertilizer granules Black usually for general growth and red for flowering

Fertilizers also come in different forms. Some are in the form of pellets and others are water-soluble powder or liquid forms. Pellets do not dissolve immediately when watered on. Preferred by many gardeners, they are slow-release pellets and release the nutrients over a period of time. There are various kinds of special fertilizers like Osmocote. So do ask the vendors for further advice.

More gardening skills

Pruning

Pruning is a necessary skill to ensure your garden look neat and healthy. Some plants can overgrow and invade spaces of other nearby plants. Others are very invading and can spread its leaves and branches widely, covering plants and deprive them of sunlight. Pruning also help some plants to develop new leaves and flowers too. It helps to keep plants compact and pruned plants have very dense foliage. Some unpruned plants for very long branches and fewer leaves do not look nice in a garden.

Propagation

There are several methods of propagating plants, but not all methods are suitable for all plants. Some plants have higher chances of propagation while some cannot be propagated with any method. We will discuss the three most common and effective methods of propagation: seeds, stem cuttings and leaf cuttings.

Seeds

The natural way of plant reproduction. Germinating seeds can be a challenging tasks for some plants. Temperate plants and exotic plants may require special growing conditions or environmental changes to germinate. Some seeds need to be frozen first, imitating the winter period and some need a dry period before germination takes place. Some even need certain bacteria or fungus to germinate! You will need to do some research on their habits and growing conditions in order to be successful.

Seeds are generally for fast growing plants. Some seedlings can take a few painful years to mature and they need special care too. For most tropical plants, seeds can be planted to moist loosen soil and it will take a few days to a few weeks before you see them sprout from the ground.



Stem Cuttings

Propagation by stem cuttings can be a good alternative for germinating seeds. The process is fairly simple, which encourages root growth in the newly cut stem. A cutting can be taken from a healthy stem of the plant and putting the cutting in potting media. Special potting media like perlite or vermiculite can also be used to increase the rate of success. The stem is usually cut in a slanted manner which increases the surface area of the stem. This encourages root growth and also makes water absorption easier for the cutting.

Some gardeners also apply rooting powder, a hormone to induce root growth to increase rate of success. Roots can take about a week or two to develop and we usually determine whether the cutting has been successfully done by looking for new leaf growth. Rooted cuttings will then take a few weeks to a year to mature, which is much faster than growing from seeds.

Pictures: A healthy rosemary cutting of good length is suitable for stem cutting. Lower leaves are removed. The end of the stem is cut in a slanted manner

Leaf Cuttings

Some plants do not have distinct stem structures, like rosette growing plants or rhizomatous plants. Propagation by leaf cuttings can sometimes prove an effective way for such plants. As compared with stem cuttings, leaf cuttings are much more delicate, due to its tissue structure which do not store much food reserves to survive for a period of time. Leaf cuttings are usually taken at the petiole of the leaf, the connecting tissue between the leaf and the plant as its exposed area is much smaller. It can also be done on the blade of the leaf, but this would expose a larger area and water loss is much faster than the cutting at petiole.

Pests & Diseases

This is a very big topic in gardening and I will only touch the basic ideas you will need to know here. There are numerous pests and diseases which can affect any type of plants and sometimes extremely hard to eradicate. White cotton-like infestations on leaves are mealybugs, which is the most common pest. Every gardener will experience some degree of infestations and various methods can be used to treat it. Not all methods will work for you and you will find an effective method to deal with such infestations.

For me, I have tried several different methods, from simple off the shelf pesticides to chemical pesticides, and I have found that this chemical pesticide, Malathion, is effective with most pests including mealy bugs, scales and spider mites. When plants got infested with such pests, you will need to isolate the plant from your garden to stop further spread of the infestation. Treat only those with minor infestations and discard any horribly infested plants. Pesticides must be applied for a period of time, as the first application will kill most of the pests, but the eggs will still survive. Infestation will stop when all eggs are hatched and all pests are killed. Prevention is better than cure, it is a good habit to treat your plants with mild pesticides and check them regularly before it got out of hand.

More skills to pick up

This ebook helps you to get started with gardening and equipped you with the basics. There are still more gardening skills and tips you will pick up along the way. Tips like "do not water your plants in a hot sunny day, do it in the morning or evening." Do read up more and find out more about plants from books and the Internet. I have a personal gardening blog where I talk about plants which I grow and tips to take good care of them. Do visit and ask questions at dreamandgrowit.wordpress.com

Suitable plants for apartment growers

As I am an apartment grower, I will share some of the plants I have tried growing and they have been proven to do well in my growing conditions. My growing area receives direct sunlight for 4-6 hours and bright light throughout the day. Relative humidity is around 50-70% and only with occasional breeze. Suitable plants I have tried growing are the following:

Fragrant Plants



Hoya nummularioides



Aglaia dupperreana
("Chinese Perfume Plant")



Wrightia religiosa ("Shui Mei")

Flowering Plants



Hoya obscura



Ipomoea quamoclit (Star Glory)



Dendrobium Orchids



Adenium obesum (Fu Gui Hua)



Ipomoea alba (Moonflower)



Anthuriums (Flamingo flower)

Fruiting Plants



Capsicum



Pinto Beans



Dwarf pineapple



Barbados Cherry (Malpighia glabra)



Chiku (Manilkara zapota)



Butterscotch Beans

Carnivorous Plants



Venus Flytrap (Dionaea muscipula)



Tropical Pitcher Plants (Nepenthes spp.)



Sundews (Drosera spp.)