GROWING FOOD
ON BALCONIES AND ROOFTOPS
IN CONTAINERS AND POTS

URBAN PERMACULTURE
GARDENING GUIDE

A tool for building skills
for sustainability and resilience

CONTENTS

CROP IN A POT

BUILDING SKILLS FOR SUSTAINABILITY AND RESILIENCE

The project's main objective is to help foster social, environmental and economic sustainability by providing groups with skills and knowledge to grow some of their own food at home within the space that is available to them.

SOS Malta set up an Urban Garden Exhibition space within the SOS Malta outside area which is now an exemplary space displaying different ways to grow produce in an urban setting. 60 selected beneficiaries were provided with the means, ideas and knowledge to introduce low cost methods of growing food at home in an affordable way through a series of workshops held in the urban garden exhibition space. Also providing further inspiration and a chance for some hands on learning about permaculture, sustainable and organic agriculture.

As a result, the project has brought together individuals who have increased their knowledge and skills in permaculture/ sustainable home growing in an urban setting, increased their health and wellbeing and are contributing to increasing green spaces in urban spaces in Malta.

A project implemented by SOS Malta and part financed by the Malta Community Chest Fund Foundation.

Alexandra Cachia, from Malta, has worked in Permaculture for the last 6 years over the Maltese Island. She obtained her PDC (Permaculture Design Certificate) at Terra Alta Portugal.

Alex was brought onboard as the trainer to provide the development and implementation of interactive workshops for CROP in a POT project within SOS Malta urban garden exhibition space. All workshop participants were given an introduction to Permaculture, How to design a Permaculture Urban Garden and Implementing an Urban Permaculture Garden. They were provided with the means, ideas and knowledge to introduce low cost methods of growing food at home in an affordable way and given an overview of Permaculture design principles as thinking tools that when used together allow us to creatively redesign our environment and our behaviour in a world of less energy and resources. As the developer of this Urban Permaculture Gardening Guide, Alex sincerely hopes that the publication will be useful in supporting and increasing the number of people to grow food on balconies and rooftops, containers and pots.

Thrive offers event management services and workshops in relation to wellness/health, self-growth and connection. We create spaces that offer people to connect deeper with themselves, each other and nature. To live in a world where human and nature can thrive hand in hand.

Among other services, we offer:

- Workshops and training on Permaculture, Composting, Organic vegetable growing
- Permaculture Garden Design (Designing & implementing your garden patch to get the most effective use of the space you have while benefiting yourself and the environment at the same time)
- Social Permaculture workshops and design (how to apply these principles to our everyday lives)
- Wellness in the Workplace: A variety of workshops and activities tailored for those who work in a professional environment. The workshops offer participants tools that can support life and its demands. These workshops target our most basic human needs self-actualization, esteem, love and belonging. When our basic human needs are met, we are able to function effectively and effortlessly in our work and personal environment.

PLEASE CONTACT US FOR MORE INFO:

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WHAT ARE THE SUSTAINABLE DEVELOPMENT GOALS

As part of a new sustainable development roadmap, the United Nations approved the 2030 agenda, which contains the Sustainable Development Goals, a call to action to end poverty, protect the planet and guarantee the global well-being of people.

Ratified by all member states, this roadmap seeks to:

- **Eradicate poverty and hunger**, guaranteeing a healthy life
- Universalise **access to basic services** such as water, sanitation and sustainable energy
- Support the generation of development opportunities through inclusive **education and decent work**
- Foster **innovation and resilient infrastructure**, creating communities and cities able to produce and consume sustainably
- **Reduce inequality** in the world, especially that concerning gender
- Care for the **environment,** combating climate change and protecting the oceans and land ecosystems
- Promote collaboration between different social agents to **create an environment of peace and sustainable development**

WHAT IS SUSTAINABLE DEVELOPMENT?

Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable development calls for concerted efforts towards building an inclusive, sustainable and resilient future for people and planet.

For sustainable development to be achieved, it is crucial to harmonize three core elements: economic growth, social inclusion and environmental protection. These elements are interconnected and all are crucial for the well-being of individuals and societies.

Eradicating poverty in all its forms and dimensions is an indispensable requirement for sustainable development. To this end, there must be promotion of sustainable, inclusive and equitable economic growth, creating greater opportunities for all, reducing inequalities, raising basic standards of living, fostering equitable social development and inclusion, and promoting integrated and sustainable management of natural resources and ecosystems.

THE MALTESE SCENARIO

There is need to strengthen communities from the inside out to tackle all aspect of sustainable development - Social, Economic and Environmental:

Social: Malta has once again been confirmed as the most obese nation in the European Union[1] with results from the first local Food Consumption Survey[2] showing the Maltese as still having poor eating habits coupled with a low consumption of vegetables. Empowering people with the knowledge and skills to care for and grow their own produce from home will not only provide an incentive to add nutritionally rich food to their meals but also result in being happier.[3]

Environmental: There are particular environmental issues that need to be addressed within Malta, including the lack of green space, scarce water resources and a high dependency on either imported or non organic produce - Maltese fruit and vegetables are the most likely to contain illegal levels of pesticides in all of Europe.[4] Initiatives that promote organic growing, encourage biodiversity and the sustainable use of water is needed to ensure the future sustainability of the island.

Economic: Encouraging home growing or organic farming is not so simple due to the lack of open space especially in built up urban areas and costs involved in home production. We need to be able to adapt growing habits to suit the needs of the space in which we live and to the funds we have.

CROPinaPOT aimed to tackle these challenges by introducing alternative solutions, providing a home growing gardening kit and interactive hands on learning to allow beneficiaries to grow in small spaces, at a low cost using an environmentally friendly approach using Permaculture principles.

SUSTAINABILITY OF CROPinaPOT PROJECT POST FUNDING

The very nature of the project lends itself to contributing to sustainability in the long term providing the target group with the means to become more self sustainable in terms of food production and security. Additionally, the project seeks to instill a culture shift in which people take ownership for their health and wellbeing whilst minimizing their negative impact on the surrounding environment.

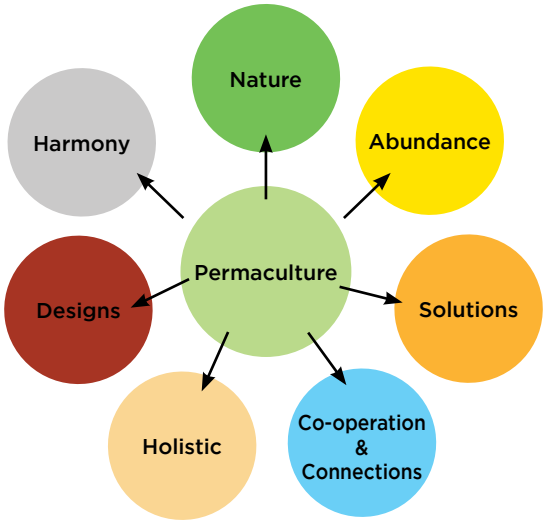
WHAT IS PERMACULTURE

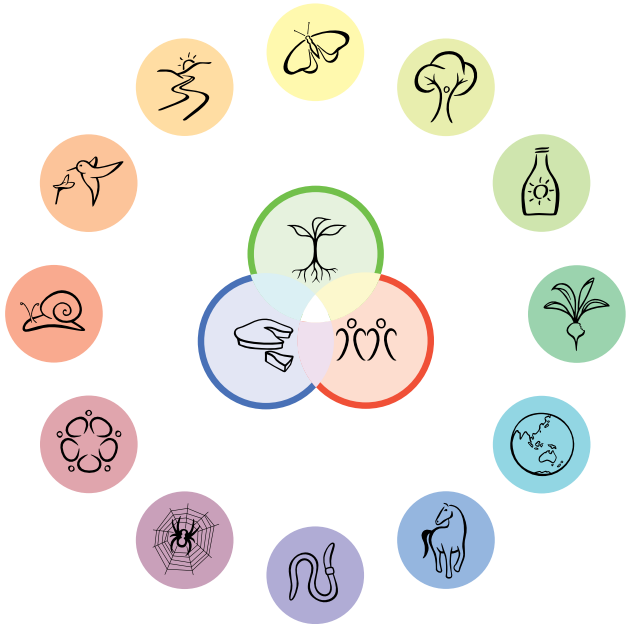
"Consciously designed landscapes which mimic the patterns and relationships found in nature, while yielding an abundance of food, fibre and energy for provision of local needs"

David Holmgren & Bill Mollison; Permaculture One, 1978

"A design system for sustainable human habitats that supply human needs in an environmentally sustainable way"

Geoff Lawton





Permaculture Ethics

Care of the Earth Care of People Fair Share

& Design Principles

1. Observe & interact
2. Catch & store energy
3. Obtain a yield
4. Apply self-regulation & accept feedback
5. Use & value renewable resources & services
6. Produce no waste
7. Design from patterns to details
8. Integrate rather than segregate
9. Use small & slow solutions
10. Use & value diversity
11. Use edges & value the marginal
12. Creatively use & respond to change

David Holmgren https://permacultureprinciples.com/

Permaculture is an approach to designing human settlements and perennial agricultural systems that mimics the relationships found in natural ecologies. It was first developed practically by Austrian farmer Sepp Holzer on his own farm in the early 1960s and then theoretically developed by Australians Bill Mollison and David Holmgren and their associates during the 1970s in a series of publications.

Central to permaculture are the three ethics: care for the earth, care for people, and fair share. They form the foundation for permaculture design and are also found in most traditional societies. The 12 principles of permaculture are found on page 16.

David Holmgren is best known as the co-originator with Bill Mollison of the permaculture concept following the publication of *Permaculture One* in 1978. His passion about the philosophical and conceptual foundations for sustainability which are highlighted in his book, *Permaculture: Principles and Pathways Beyond Sustainability.*

WHY GROW FOOD ON MY BALCONY OR ROOFTOP?

- It looks and tastes better
- Gardening is therapeutic
- Reduces food miles of fruit and veg
- Keeps cities cool
- Reduces pressure on city drains
- Reduces air and noise pollution

PERMACULTURE DESIGN PROCESS

- Assess needs of the space
- Create a Base Map of the property
- Observe your site and all external elements interacting with the space
- Establish a Sector Analysis
- Establish a Water Analysis
- Check the Soil & Nutrient Sources on Site
- Asses the Microclimates
- Asses Zone & Broad Design Placement
- Establish Poorly Placed Elements
- Detailed Design
- Action
- Self-regulating Feedback Loop

SUSTAINABLE URBAN GARDENING

- Plan and Apply Permaculture Design before starting
- Worm Composting
- Rainwater Harvesting
- Beekeeping or Planting a Pollinator Friendly Garden
- Repurposing second hand materials into containers/ troughs/trellises etc

CONSIDER SAFE WEIGHT DISTRIBUTION ON A ROOF/BALCONY

- Use lightweight pots if concerned
- Site pots near to house or on load-bearing supports.
- Spread the load throughout space
- For large projects with raised beds etc, consult a surveyor

WATER:

Pots and containers always require more frequent watering than plants in the ground. As the season progresses and your plants mature, their root system will expand and require even more water. Don't wait until you see the plants wilting. Check your containers daily to judge the need for water.

- Ensure to avoid blocking drains
- Apply Rainwater Catchment Systems using already established gutters and drains
- Save water by Mulching

SHADY BALCONY

If it's a shady balcony (north or east-facing, or overshadowed by nearby buildings), choose shade-tolerant plants. Parsley, mint, chives and low, quick-growing leafy food crops such as lettuce, spinach and oriental salad leaves will also cope well.

Remember that using large containers also allows you to combine plants in space-efficient ways that take advantage of the microclimate created. For example, a large shrub can be underplanted with low-growing plants with a sheltered corner of the pot left free.

TOP SHADE LOVING CROPS:

- Salad leaves
- Runner beans
- Rocket
- Peas
- Beetroot
- Radishes
- Chard
- Spinach
- Herbs (parsley, coriander)

CONSIDERATIONS FOR HIGH SUN EXPOSURE:

- Shade Screens
- Shade Sails
- Retractable Fabric Awning

WIND

Wind can be a real hazard for any container-grown plant, and tall vegetables - like tomatoes or trellised cucumber and squash - become top heavy as they produce fruits. Try to place your containers so that they are not in an overly windy location. A breeze will provide nice air circulation and help prevent fungal diseases, but a strong wind can topple plants and containers and can also shred leaves and dislodge fruits. If you are gardening on a raised deck or a rooftop, it may be necessary to provide some type of wind block. Also consider that wide bottomed containers are less susceptible to being blown over.

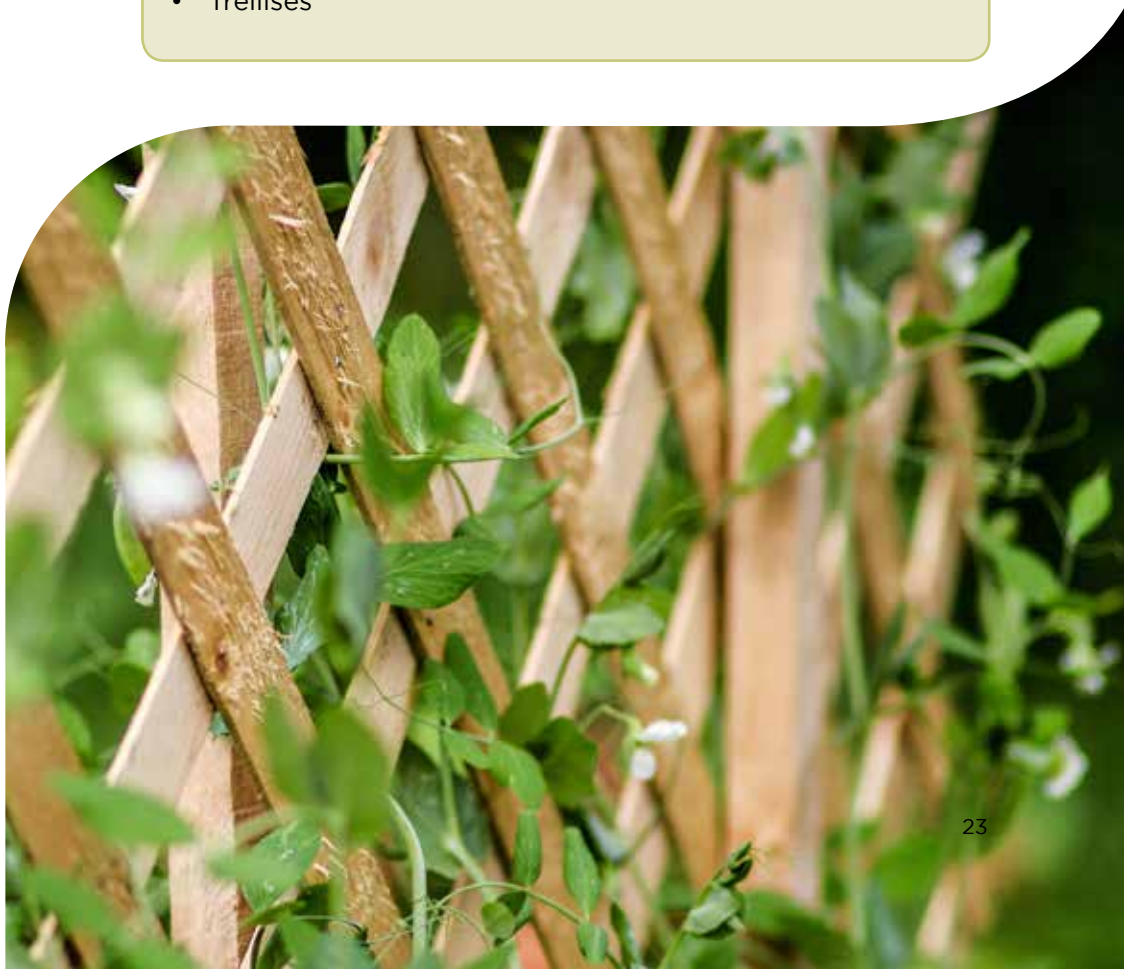
TOP CROPS FOR A WINDY SITE:

- Herbs: bay, rosemary, thyme, sage, oregano, chives, parsley
- Radishes
- Rocket
- Lettuce
- Leeks
- Carrots
- Spring Onions
- Chard
- Pak Choi
- Kale
- Strawberries
- Garlic
- Olives
- Potatoes

If your balcony garden is an especially windy and exposed one, then consider offering extra protection in the form of semi-permeable screens/trellising/wind membrane but do make sure that these are very well-secured. The last thing you want is a strong gale wrenching them loose and causing injury to a hapless passer-by. Checking the predominant winds and directions in your area allows you to place wind barriers and vulnerable plants appropriately.

TIPS FOR A WINDY SITE

- Pick wind tolerant plants
- Keep soil fairly low in pot to allow pot sides as protection (still attaining the necessary depth required by the plant)
- Have low fencing around each container as an custom windbreak for each plant (e.g woven fencing)
- Heavy mulch to prevent wind drying soil
- Well placed evergreen shrubs
- Low trees that act as a windbreak
- Trellises



PLANT TYPE

The majority of the kinds of plants you choose should be ultra-hardy, wind-resistant, drought-tolerant and evergreen so that they offer plenty of foliage interest and do a great job of filtering out traffic noise and fumes throughout the year.

Add pollinator-friendly crops of seasonal colour with flowering bulbs and bedding plants such as vegetables and other plants that give you a yield in some way. Leave some room to fast-growing, space-efficient edibles such as salad leaves, nasturtiums and culinary herbs such as borage, sage and thyme.

WHAT TYPES OF PLANTS TO GROW? INCLUDE A DIVERSITY OF THE FOLLOWING:

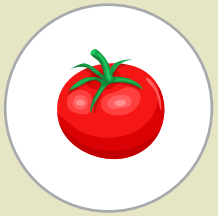
- Culinary Herbs
- Medicinal Herbs
- Dynamic accumulators in beds (soil builders) E.g comfrey and borage
- Nitrogen fixing plants in beds
- Mixed Berries
- Annual Veggies
- Fruit and Nut Trees
- Misjudged Weeds
- Edible Flowers

WHAT TO CONSIDER WHEN CHOOSING WHAT TO PLANT?

- What is in season? (Malta is an International Zone 10 climate. See chart for info of what to plant when)
  See in Website References
- Amount of water, wind and sun they can take depending on what your space offers. Choose plants that match what is appropriate on your balcony/roof
- What soil quality do they like? Ph? (This is important for raised beds or troughs not if using new store bought potting mix)
- How much space does the plant need when it is at full maturity
- What other plants can support this plant (Companion Planting)
- What plants should you avoid planting near this one (Companion Planting)
- Are they an Annual or Perennial
- Include nitrogen fixing plants in beds or troughs. There are a few plants that are able to draw the nitrogen gas from the air and store it in their roots. These are called nitrogen fixing plants, e.g. legume plants such as beans and peas. While they are growing, they release very little nitrogen into the soil, but when they are done growing and they die, their decomposition release the stored nitrogen and increases the total nitrogen in soil. Their death makes nitrogen for plants available later on. Maltese endemic nitrogen fixing trees available are the Carob and Judas trees.
- Include Dynamic Accumulators in beds or troughs (Certain plants, often deep-rooted ones will draw up nutrients from the lower layers of the soil, and these nutrients will be stored in the plants' leaves. When the leaves fall in autumn and winter and are broken down, those stored nutrients are then incorporated into the upper layers of the soil where other plants will benefit from their deposition.)
- Diversity of crops and plant types is key as strengthens plant survival rate.

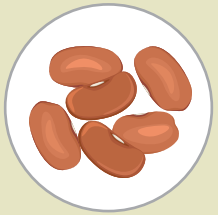
To find out in depth what the planting requirements are of the plant you choose to plant, research the "Planting Guide" of that particular variety on the internet or from a book.

BEST VEGETABLES TO GROW IN POTS



1. TOMATOES

Without a doubt, tomatoes are the most productive vegetables you can grow in pots. Tomatoes need ample sun (5-6 hours minimum). The pot size should be a minimum of 30cm though it also depends on the type of tomatoes you are growing. In containers, growing dwarf varieties of determinate type is best. You should also try cherry tomatoes for higher yield.



2. BEANS

Most of the beans are climbers or bushier type and they grow upward. They are productive in pots and are easy to grow. You can grow them on a trellis near a wall and within weeks, you will get a green wall of beans running across the trellis. For growing beans you need a sunny place, and a pot that is minimum 30 cm deep (the bigger the better) and a strong trellis like structure for support. Since beans fix the nitrogen most of the vegetables that require more nitrogen are good to grow underneath them. If you're growing beans in a very large pot you can grow summer savoury, kale, or celery with them.

3. LETTUCE

Lettuce grows up quickly and you will have the opportunity to harvest them multiple times throughout the growing season. As lettuce is a cool season crop, you will have to decide what is the right time for its growth according to your climate, usually, seeds are started in spring. But if you live in a warm climate, grow lettuce in winter.

For growing lettuce, choose a wide planter rather than deep (15cm deep is enough). When planting, make sure to leave space of at least 10cm between each plant. Remember, leaf lettuces can be grown more closely than head lettuces. Use well draining soil and do shallow and frequent watering to keep the soil slightly moist always.

4. PEPPERS AND CHILLIES

Peppers and chillies are super productive and excellent candidates for growing in containers. They look great in pots and need a sunny and warm place to thrive. If you keep the pot in a sunny spot and provide right soil and fertilize the plant time to time it will fruit heavily. A large pot that is at least 30cm deep is optimum.

5. RADISHES

Radishes are one of the quickest growing vegetables and suitable for container vegetable gardening as you can also grow them in small and wide pots. A planter that is just 30cm deep is enough but if you want to grow larger varieties use a 25cm deep pot. Allow 7cm of space between each plant.

6. ASIAN GREENS

Asian greens are great crops to grow in pots as they grow fast and don't need a lot of sun. You can grow them in shade in a spot that receives 3-4 hours of morning sun. Providing them plenty of moisture and organic fertilizer is important so that they thrive.

7. SPINACH

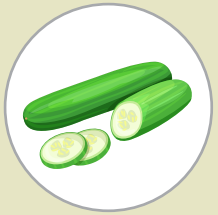
Spinach is one of the best vegetables for containers. It grows well in partial shade and in any kind of space. Growing spinach in containers is easy too you can even grow it indoors on a windowsill. For growing spinach in pots, choose a pot that is least 20cm deep. You don't need a very deep pot rather use a wide one.

8. PEAS

Peas prefer moderate conditions, they are a perfect crop for container gardening and don't require a large pot. They grow quickly without attention. You can even grow peas on a balcony. Choose a dwarf or bushier type varieties and do regular and frequent watering as peas prefer slightly moist soil. Keep the plants in a spot that receives full sun to part sun

9. CARROTS

Carrots grow best in cool weather. Carrot plants need regular watering, otherwise the roots dry out and crack. Growing this plant in containers is easy and it doesn't take much space too.



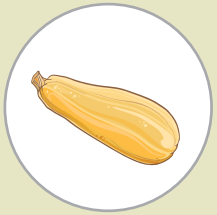
10. CUCUMBER

Cucumbers are heavy feeders and require regular watering too. Grow them in a medium to large sized pot (depending on the variety) and in full sun. You can have your homegrown successful crunchy cucumbers within a few months.

11. EGGPLANT

Although eggplants are susceptible to many garden pests, still growing them is easy. They are heat-loving plants and need high temperatures both day and night, thus a suitable summer crop.

Also, it is easier to maintain them in containers than in a large vegetable garden. It is necessary that you keep the pots in full sun and feed heavily (like all other plants from tomato family– peppers, tomatoes, potatoes; eggplants are heavy feeders too).



12. SQUASH

Squashes are easy to grow plants. Summer squashes (Zucchini) are more productive than winter squashes. You can harvest in containers. It is one of the most suitable crops for rooftop, balcony or patio gardeners.

13. KALE

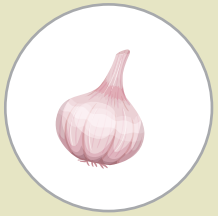
Growing kale in containers is easy. You can harvest it many times, picking up the young tender leaves again and again or cutting the whole plant at once. Kale is a cool weather crop but it can still tolerate some summer heat. However, this biennial starts to taste somewhat bitter and strong during hotter months.

14. CHARD

Chard tolerates heat better than kale and it is more suitable for you if you live in a warm climate. However, it is still a cold weather crop so wait for the end of summer. Both kale and chard can be grown in small sized pots. Each plant requires at least 15cm of space.

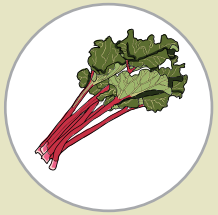
15. MUSTARD GREENS

Mustard greens are not as cold hardy as the above two (Kale and Chard), they love warmth. Growing mustard greens is easy and they grow without much attention.



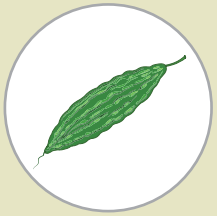
16. GARLIC

Garlic bulbs are expensive but they are one of the healthiest foods too. The best part is you can also grow them at home in containers. Growing garlic in containers, choose a pot that is at least 20cm deep and as wide as possible, you'll need to leave 15cm of space between each clove you plant.



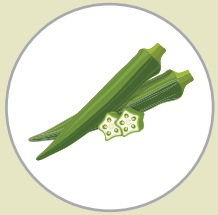
17. RHUBARB

Rhubarb is grown for its red, pink or greenish pink edible stalks. Why we've added rhubarb in this list is the reason that growing rhubarb is easy (even in containers), it grows for years and you can harvest the stalks multiple times. For growing rhubarb you'll need a really deep pot and well-draining soil.



18. BITTER MELON

This exotic and healthy edible is probably one of the best vegetables to grow in pots. Growing it is similar to squashes, cucumbers, and melons. You will need a 30cm deep pot and a sturdy trellis.



19. OKRA

Okra is a warm season crop. It is easy to grow and doesn't require masterful gardening skills. Providing good exposure to the sun and feeding with plenty of fertilizer sets the plant to fruit heavily. Dwarf okra varieties are more suitable for containers.

20. COLLARD GREENS

Collard greens can be a good alternative to spinach or other green leafy crops. You can grow this biennial as an annual in containers easily. You can harvest collard quickly after 75 days from transplanting. Harvesting young and tender leaves; cut them back and they will come again.

POT OR CONTAINER CONSIDERATIONS

Bigger = Less Maintenance (Less watering and feeding)
Types of containers: Custom fitted, cheap containers in DIY/ Garden shops, galvanised dustbin, fiberglass, terracotta, trough (ideal for balcony), flexible plastic tubs, self watering containers, Grow bags, Polanters, Woolly Pockets

CONTAINERS AND POTS FOR VEGETABLE GARDENS

- Selecting Containers: Containers for your vegetable gardens can be almost anything: flower pots, buckets, wire baskets, bushel baskets, wooden boxes, nursery flats, window planters, washtubs, strawberry pots, plastic bags, large food cans.
- Drainage: No matter what kind of container you choose for your vegetable garden, it should have holes at the base or in the bottom, to permit drainage of excess water. Vegetable plants will die if left sitting in wet soil.
- Colour Considerations: You should be careful when using dark colored containers outdoors because they absorb heat which could damage the plant roots. If you do use dark colored pots, try painting them a lighter color or shading just the container, not the plants.

HANGING BASKET CONSIDERATIONS:

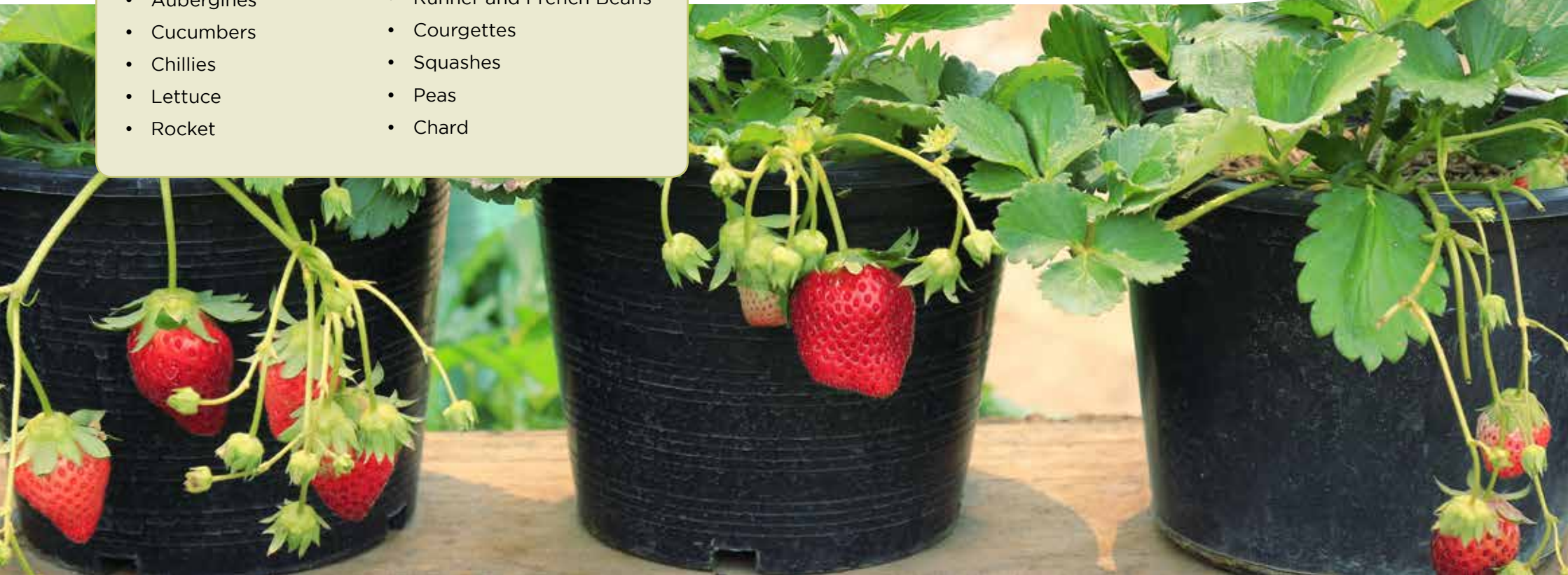
- More frequent watering
- Well secured
- Be creative and repurpose items for containers, e.g pasta colander
- Bring life and colour into the balcony space
- Produce a surprising amount of food
- Effective use of vertical air space on your balcony

BEST CROPS FOR GROW BAGS:

- Tomatoes
- Sweet Peppers
- Aubergines
- Cucumbers
- Chillies
- Lettuce
- Rocket
- Basil
- Radishes
- Runner and French Beans
- Courgettes
- Squashes
- Peas
- Chard

BEST CROPS FOR A WINDOW BOX

- Herbs: Basil, Chives, Coriander and Parsley will all thrive in a medium sized box, while Rosemary, Thyme, Sage and Oregano need a deeper larger one
- Salad Leaves
- Radishes
- Spring Onions
- Dwarf French Beans
- Bush or Tumbling Tomatoes
- Strawberries
- Chard
- Edible flowers
- Chillies



DEPTH FOR PLANTING VEGETABLES

For most plants, a 20cm-deep planter box is sufficient. The depth may vary for some vegetables, however turnips, cucumbers, broccoli, beets, lettuce and green onions can all grow well in a planter box at that depth, but other vegetables, like cabbage, need a deeper depth of at least 25cm. Vegetables like tomatoes, carrots and peppers require a deeper container of at least 30cm. To make sure any vegetable root balls have adequate growing space, leave 5cm of space on the roots' sides and 15cm on the bottom.

PLANTER DEPTH FOR FLOWERS

Annuals flowers most often have a shallow root system and grow well in a planter box with an 20cm depth. Perennials, like bulbs, require a deeper planting box depth. Large bulbs require a planting depth of 20cm, which means the planter box should allow for the 15cm needed at the bottom, as discussed earlier, making the depth at least 35cm. Most smaller bulbs are planted at 10cm deep, so they would do fine in planter box with a 20cm depth. Reading the package or container planting instructions can help when determining proper planter box depth.

WHY DEPTH IS IMPORTANT

When growing plants in planters, their roots need room to grow. If they are restricted, it can affect the plant's ability to thrive. Containers that restrict roots can affect a plant's flowering, nutrient uptake and photosynthesis along with plant yield. Container depth affects soil moisture as well because deeper planter boxes require less watering than more shallow boxes that have less soil volume. Containers that allow for more soil between the side and bottom of the container and plant roots protect the roots from hot and cold temperature extremes.

SYMPTOMS OF CRAMPED ROOTS

Plants growing in a planter box without adequate space for root development may exhibit certain symptoms that can alert you to a problem. Plants with compacted roots will exhibit reduced growth. Chlorosis, which is a yellowing of leaves often caused by a plant's inability to take in key nutrients, is often seen in plants with inadequate root systems. You can also watch for other symptoms of restricted root growth, including dropping of new leaves, small leaves, stunted growth and plant wilting.

Soil depth of at least 20 cm will hold sufficient soil, nutrients, and moisture to support a good yield from almost every vegetable and herb grown in a container. (Expect to water two or three times per week.) Smaller containers holding less soil may require more frequent watering and fertilizing.

Good drainage is essential when growing plants in containers. Containers less than 25 cm in diameter should have a hole 1.2 cm in diameter to provide good drainage. Containers greater than 25cm in diameter need two to four holes.

Least Thirsty Edible Crops: Beetroot, carrots, spinach, chard, kale, onions, peas, garlic, olives, sweetcorn, globe artichokes, edible flowers, herbs (bay, rosemary, thyme, sage, oregano, lemon verbena)

Most Thirsty edible Crops: Potatoes, strawberries, tomatoes, aubergines, courgettes, peppers, cucumbers and figs.

SUGGESTED POT SIZES FOR VEGETABLE CROPS:

Asian Leaves—Mustard and Mizuna:
Grow in 20 cm pots.

Arugula:
Grow in 20 cm pots. A good choice for growing in window boxes.

Asparagus:
Grow two plants in a 7.5L container; grow up to five plants in a 38L container.

Beans:
Allow at least 20-30 cm of soil depth for all beans. Plant bush beans at least 23 cm apart and pole beans 10 cm apart. Grow two plants in a 38L container.

Beets:
Grow seven plants in a 7.5-11L container and up to two dozen in a 38L container; thin plant to 5 cm apart.

Bok Choy:
Grow one plant in an 20 cm pot.

Broccoli:
Grow one plant per 19-38L container. Start with young plants.

Brussels sprouts:
Grow one plant per 11-L container; two in a 19-38L container. Start from seedlings.

Cabbage:
Grow one large head in a 7.5L container; plant two per 11-19L container then thin out weakest in a few weeks; grow three plants in a 38L container.

Carrots:
Grow varieties that mature at 5-10 cm in 4-7.5L; varieties that mature 13-15 cm long use 19L containers; varieties that mature 18-30 cm long use 38L containers. Keep thinning until 5 cm apart. If root tip touches the bottom of the pot, the carrot will not develop to maturity.

Cauliflower:
Grow one plant in a 1-19L container; grow three in a 38L container.

Celery:
Grow one plant in a 7.5L bucket; grow five plants in a 38L bucket.

Chard:
Grow one plant in a 7.5L container; grow five plants in a 38L container.

Chicory:
Grow three plants in an 45 cm pot.

Chives:
Start seed in a 7.5 cm pot; pot up plant to an 20 cm pot.

Collards:
Grow two plants in a 7.5L container and four in a 19L container.

Corn:
Grow corn in containers with a soil depth of 20 cm or more. Grow three standard size plants in a 57L and six in a 114L container. Six bantam types can be grown in a 57L container. Space plants 10cm apart.

Cucumbers:
One compact type in a 19L container and two to three standard variety plants in a 7- to 26-38L container.

Eggplant: Grow one plant per 19L container. Grow two or three plants in a 38L container.

Endive: Grow plants in an 45 cm container; thin plants to 20 cm apart.

Garlic:
Plant cloves 8cm apart in a 19L container.

Horseradish:
Grow one plant in a 19L container or larger—this is a deep rooted plant.

Jicama:
Grow one plant in a 11-19L container.

Kale:
Grow one plant in a 4L container; grow two plants in a 19L container. In larger containers, thin plants to 41 cm apart.

Kohlrabi:
Grow one plant in an 20 cm pot.

Leeks:
Grow 18 plants in a 19L container; 24 plants in a 38L container. It's best to grow leeks in a container at least 35 cm deep.

Lettuce:
Grow head lettuce in containers large enough to thin plants to 25 cm apart; grow crisp head, romaine, and butterhead lettuce in a container large enough to thin to 25 cm apart.

Mustard Greens:
Grow in at least 20 cm pots; thin plants to 10 cm apart.

Melons:
Grow one plant in a 19L container or larger and two in a 38-57L container.

Okra:
Grow one pant in a 38L container or larger.

Onions:
Grow bulbing onions in a 60 cm pot; don't crowd your sets or seeds. The container should be at least 10 inches (24 cm) deep. Green onions can be grown in a shallower container.

Orach:
Grow one plant in a 30 cm pot.

Peas, including Snow peas and Sugar snaps:
Grow bush and climbing types in a 38L container, a window, or planter box; space plants 5 cm apart. Put a construction wire trellis in place for them to grow up.

Peppers:
Grow one large bell pepper in a 11L container or larger. Smaller chili plants will grow in less space. Space plants 30cm apart.

Potatoes:
Grow potatoes in a container at least 30 cm wide and 30cm deep. Plant four or five seed pieces in a 19L container; plant 10 seed potatoes in a 57-76L container or half whisky barrel.

Pumpkins:
Grow one vine in a 19L or larger container.

Radishes:
Grow plants in soil 20 cm deep pot; thin plants from 2.5-5cm apart.

Rhubarb:
Grow one plant in a 38L container or larger.

Rutabaga: Grow 15 or 16 plants in a 57-74L container.

Scallions: Grow plants in a 45 cm pot; thin plants to 5 cm apart.

Sorrel: Grow in a 30 cm pot.

Spinach: Grow three plants in a 7.5L container; grow ten plants in a 38L container; thin plants to about 13 cm apart.

Squash: Grow one plant in a 19L container, larger is better. Plant two vining plants in a 38L container.

Sweet Potatoes: Use a 76L container or half whiskey barrel.

Swiss Chard: Grow plants in 30 cm or larger pots; thin plants to 20 cm apart.

Tomatoes: Grow one large variety in a 38L container – a 57-76L container is better. Miniature tomatoes can be grown in a 19L container. Start tomato seed in 7.5 cm pot then pot up to a 12.5 cm pot, and continue potting up until you set the plant outside

Turnips: Grow 15 or 16 plants in a 57-76L container.

Zucchini: Grow one plant in a 30-45 cm pot

KNOWING YOUR SOIL QUALITY

SOIL AND FERTILIZER

You can use soil in your container vegetable garden, but potting mixes can be very helpful to start especially when planting seeds . Peat-based mixes, containing peat and vermiculite, are excellent. They are relatively sterile and pH adjusted. They also allow the plants to get enough air and water. Mixing in one part compost to two parts planting mix will improve fertility.

Using a slow release or complete organic fertilizer at planting will keep your vegetables fed for the whole growing season.

Feeding: An all rounder organic fertiliser is sustainably sourced liquid seaweed

Organic fertilizers differ from inorganic fertilizers in one aspect: organic fertilizers are derived from naturally occurring substances, such as plant or animal byproducts and mineral rock, whereas inorganic fertilizers are synthetically manufactured. Besides adding necessary nutrients to soil, organic fertilizers improve soil structure and water drainage, which most plants rely on for healthy growth and development. Organic fertilizers are available in many forms, including compost, manure, marine byproducts, meals, minerals and mulch.

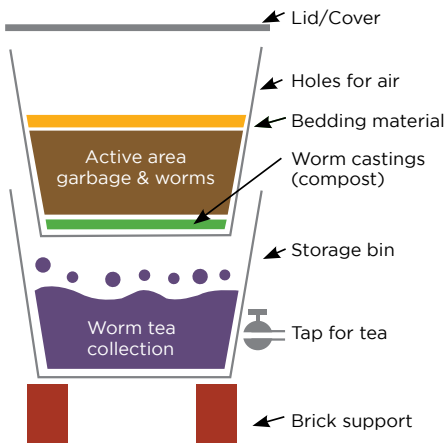
COMPOSTING

Composting recycles various organic materials otherwise regarded as waste products and produces a soil conditioner (the compost). Compost is rich in nutrients. Compost is beneficial for the land in many ways, including as a soil conditioner, a fertilizer, addition of vital humus or humic acids, and as a natural pesticide for soil.

Compost Hungry Crops: tomatoes, potatoes, sweet peppers, aubergines, courgettes and squashes.

VERMICOMPOSTING:

- Having a homemade worm bin on your balcony roof is perfect in a shady spot!
- Easy to make and maintain

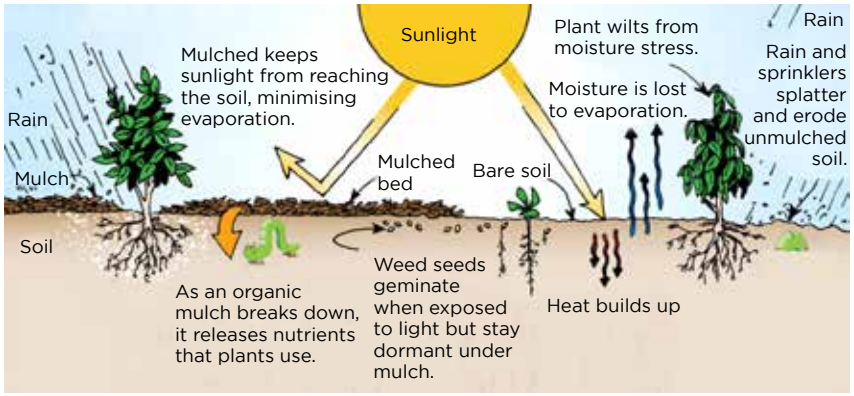


MAKING COMPOST TEA AS A FERTILISER:

- Using a clean large bucket, fill 1/3 full of quality finished compost/worm castings and then fill close to the top with water.
- Let the mixture steep for 3-4days. Stir it now and then.
- Strain the mixture through cheesecloth or other porous fabric (burlap, old shirt) into another bucket. Add the remaining solids to your garden or compost bin.
- Dilute the remaining liquid with water so it's the colour of weak tea (use a 10:1 ratio of water to tea).
- Use tea immediately for optimal absorption into the soil around plants - For potted plants
  - For young delicate or potted plants, dilute tea.
  - Around Root Systems
  - As a Foliar Spray (Add 1/8 tsp vegetable oil or mild dish-washing liquid per lite to help it adhere to leaves.)

MULCHING:

Mulch insulates the soil helping to provide a buffer from heat and cold temperatures. Mulch retains water helping to keep the roots moist. Mulch keeps weeds out to help prevent root competition. Mulch prevents soil compaction.



Centenary Landscaping Supplies https://centenarylandscaping.com.au/blog/

PEST CONTROL:

There are many natural ways to repel insects (that are a vital part of our ecosystem), using homemade natural remedies you can target every insect. Refer to Easy, Safe, Kitchen Remedies pull out.

TIPS FOR HASSLE FREE URBAN GARDENING:

- Start with seedlings not seeds
- Add stones at bottom of containers for drainage
- The bigger the pot the better (small pots dry out faster)
- Use self-watering pots/home-made devices
- Use irrigation with a timer
- Mulch it

10 BEST EASY CROPS:

- Tomato
- Salad Potato
- French Bean
- Lettuce
- Radish
- Rocket
- Spinach
- Chard
- Buckler's leaf sorrel
- Sunflower sprout
- Strawberry
- Herbs: Rosemary, Thyme, Parsley, Mint, Basil, Coriander, Chives, Sage, Bay , Tarragon, Oregano, Lemon Verbena
- Carrot
- Courgette, Squash and Pumpkin
- Chilli

THE RECYCLED BALCONY IDEA:

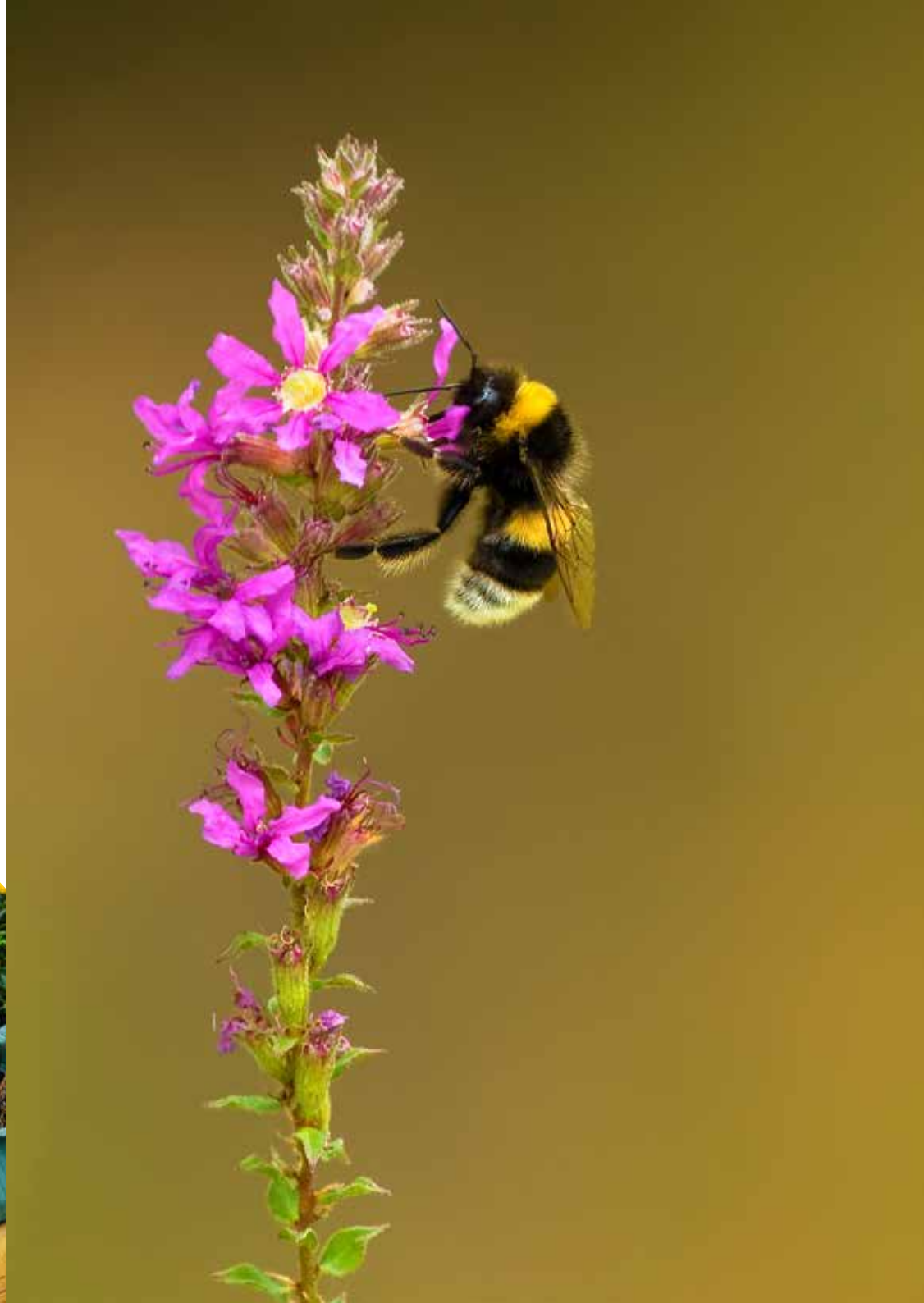
- Use yoghurt tubs, cut-down plastic bottles for growing seedlings
- A colander instead of a hanging basket
- Make your own gentle watering can by transforming a plastic bottle
- Make a simple self watering container
- Hanging bottle herb garden
- Make a tyre planter

GROWING FRUIT TREES IN POTS:

- Must be grown on a dwarfing rootstock and will be happy in a pot
- Possible to grow traditionally or shape/guide its direction upward against the wall (benefitting from the heat in the wall)
- Check if more than 1 tree is needed for pollination.

TOP 10 FRUIT TREES FOR AN URBAN GARDEN

- Plums
- Peaches and Apricots
- Figs
- Olives
- Lemons



PLANTING POLLINATOR FRIENDLY GARDENS

- Bees are an Indicator of Environmental Quality
- Provide Important Services to Humans & Ecosystem
- Pollinate our crops
- Pollinate Plants Worldwide
- Most Pollinators are insects

WHAT TO CONSIDER WHEN MAKING YOUR GARDEN POLLINATOR FRIENDLY:

- Plant flowers in groups – Large splotches of colour
- Include a variety of flowering plants that provide nectar & pollen in all seasons
- Include both day and night blooming flowers (nightshades)
- Variety of colours and shapes
- Rotten fruit can supplement their diet

- Provide shelter from the weather - Make a Bee Hotel
- Bee hotels for Carpenter Bees & Solitary Bees
- Include a variety of tree shrubs and perennials plants
- Leave some patches of open soil for ground nesting bees
- Leave some leaf litter as a shelter for butterflies, bumble bees and other pollinating insects
- Water features: puddles, fountains, bird baths
- Easy access in water features: E.g. include a cork or descending pebbles
- Do not use chemical pesticides and insecticides on your plants
- Use eco friendly methods to control pests like companion planting or Integrated Pest Management
- Allow wildflowers to flourish
- Plant nitrogen fixing plants like Clover & Alfalfa
- Linear features – herbaceous borders like hedgerows
- Plant flowers at different levels
- Provide some wide open sunny spaces
- Trees along your parameter (if in a garden)
- Bees do not see red, therefore red flowers do not attract bees
- Not attracted to elm, birch, oak, conifers, ground covers or Lawns
- Seasonal blooming plants are important:
  - Early Spring/Summer for Bees Brood
  - End of Autumn for Winter Reserves

BEE CREATIVE,
OPTIONS ARE ENDLESS!

SOS MALTA

URBAN GARDEN EXHIBITION SPACE

REFERENCES:

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[4] More than five per cent of the Maltese produce tested by the authorities in 2015 was over the limit for chemicals sprayed by farmers. The EU average was less than two per cent". https://www.timesofmalta.com/articles/view/20170423/local/maltas-fruit-and-veg-tops-eu-pesticide-tests.645933

BOOKS:

Edible Cities; Urban Permaculture for Gardens, Yards, Balconies, rooftops and Beyond. Authors: Judith Anger, Immo Fiebrig, Martin Schnyder

The Edible Balcony, Growing Fresh produce in the Heart of the City. Authors: Alex Mitchell, Sarah Cuttle

WEBSITES:

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ZONE 10 - Vegetable Planting Schedule, Hardiness Zone Look-up, & Germination Temperature Chart

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