Garden Like A Forest

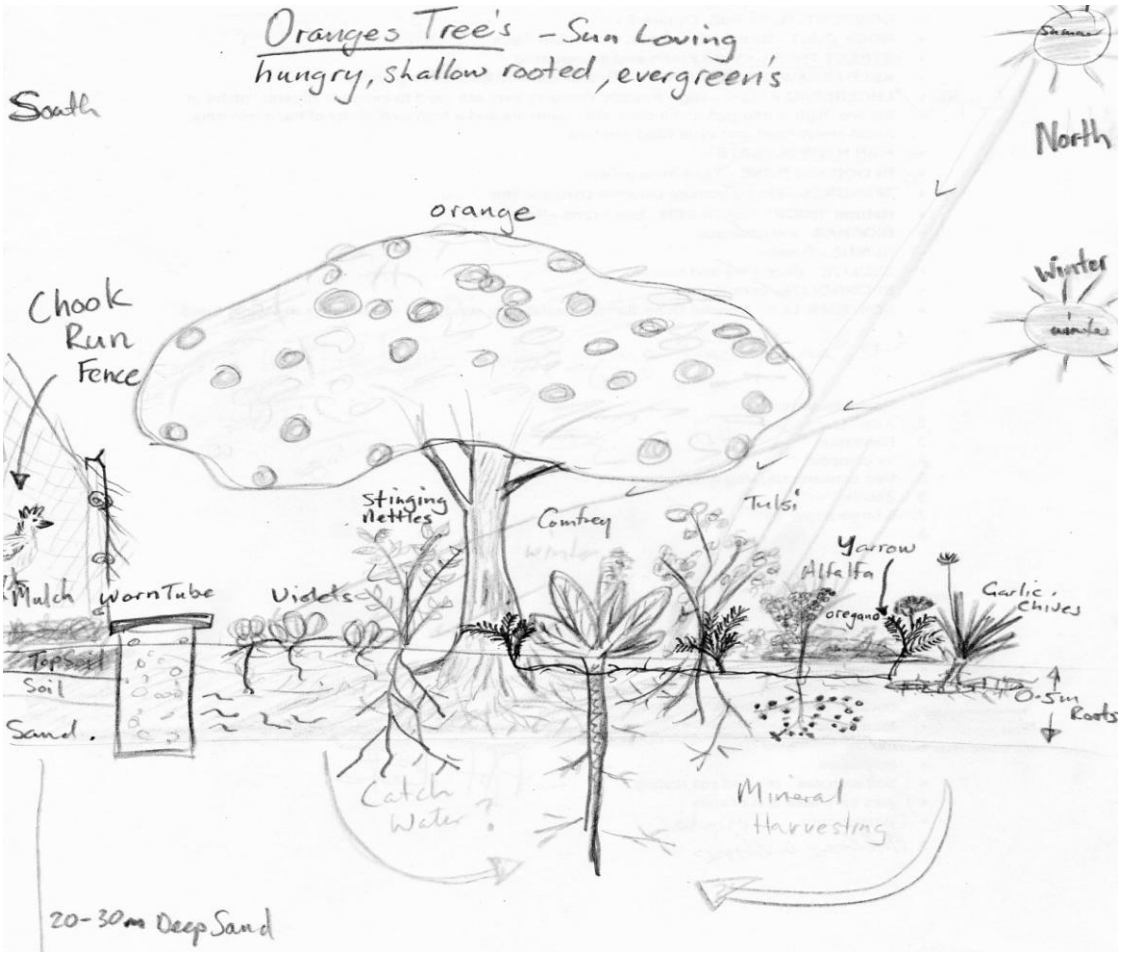
Presented by Terra Perma Design permaculture education & design | City of Stirling City of Choice | Led by the community supported by Stirling

In nature a forest requires no human maintenance and no inputs of fossil fuel energy, pesticides, herbicides or fertilisers to create an abundance of life.

By modeling our edible and medicinal gardens on the principles of a forest, we too can also have low maintenance, low input, but **human needs centered tree centric forest gardens** in Perth's harsh conditions. In fact, this forest garden offers one of the few long term urban solutions to food and life style improvement in urban areas as they have all the diversity, resilience and beauty of natural system.

A 'food forest' is a system of gardening using a diversity of mostly perennial (long-lived species, as opposed to annual vegetables) **chosen and arranged deliberately** such as they compliment and support each other, minimizing human inputs, fertilising, weeding and pests while providing a rich variety of harvests.

In smaller food gardens fruit trees are generally the centre pieces, and the only trees planted. However given the difficulty in maintaining and harvesting (fruit fly/birds) fruits trees **we advise that you design a canopy (often deciduous) that sits above these fruit trees** to protect and fertilise them. We then stack a 'guild' of food and support plants at different heights, arranged in such a way that they complement each others' needs. The following Perth Citrus support guild is an example 'soil feeding' function based guild, to support the main bulk food producing orange tree. This guild forms part of a larger food forest of similarly grouped plants based on a desired aim in those other spaces.



How to Food Forest - What information is relevant to us?

Consider a **Food Forest vs Orchard or Backyard vs Factory Farms.** Our aim is to have diverse variety of food plants supplying year round low input and low output amounts of healthy seasonal food. Creating and managing this provides enjoyable exercise and other ecosystemic benefits suited to urban backyards. Commercial Orchards are high input high output tree cropping, from identical clone trees, machine harvested, suits factory farms and supermarkets.

Create your own Table to explore this idea and you will quickly see that we should not be copying orchards and monoculture cropping (advise/techniques) if we are designing intelligently for human and ecological needs. Much of the fruit growing and pruning advise has been written for commercial orchardist and copied into home garden magazines. Home gardeners have different needs in tree function, cropping windows, maintenance, diversity and man power and almost all tree.

COMMERCIAL FARMS		**HOME GARDENS**	
NEEDS	CHARACTERISTICS	NEEDS	CHARACTERISTICS

A Food Forest Guild - An integrated arrangement of Plants for a purpose

A guild is a short term deliberate, or long term evolutionary, combination of plants that 'work' together, either naturally supporting each other or deliberately supporting out elements in the system (bee plantings for nectar and pollen). Plant guilds can be thought of and deliberately created as a combination of form and function.

Form - The goal is to match the stacking and relationships found in nature while also providing useful resources to humans. Robert Hart first published on the concept of the food forest and defined the seven layered forest ecosystem. The shape and stacking of this plant system (by their form) often arranged so the tall trees don't shade the low trees towards the sun, consists of Overstory, Understory, Shrub, Herb, Groundcover, Vining and Root crop layers. For the Southern Hemisphere we want the tall trees on the south side unless we are designing for a shaded growing space, deciduous or evergreen are key issues.

The reality of small urban spaces means these seven layers are generally condensed, instead of a Karri tree being the Overstory at 50m height, an orange tree at 3 m high is. Under this low evergreen canopy we may only have space and light for Herbs, Groundcovers and Root crops.

Form Guide Words

Wide or narrow canopy. Tall, medium or short.

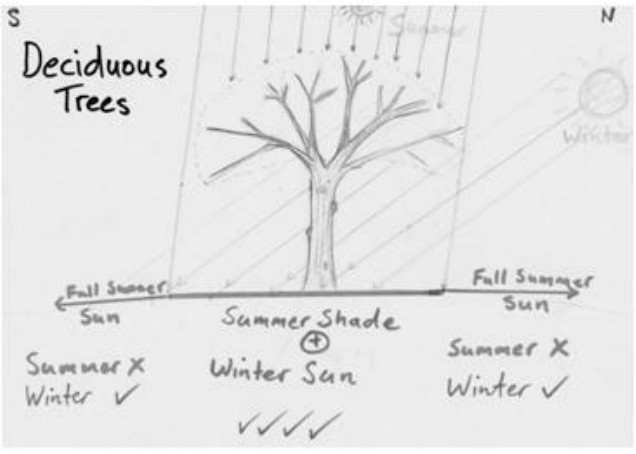
Evergreen - Deciduous

Groundcover - Vine

Leafy - Tuberous

Broad Leaf - Narrow Leaf

Shallow Rooted - Deep Rooted



Controlling Form - Pruning and High Density Planting

By restricting the size of the fruit trees through various methods, to a size of your choosing, and planting them closer together, you gain these benefits:

- Optimum Use of Limited Space – you can literally fit dozens of fruit trees in an average backyard, and a respectable number in the smallest of backyards!
- Wide Variety – this system, on account of the efficient use of space, will allow you to plant a wide variety of fruit trees, so you can eat all different types of fruit from your home garden, rather than just one or two. Having multiple varieties also means that you can have trees which are pollinators for each other, ensuring better pollination and consequently, better yields.
- Sensible Production – the smaller trees will obviously produce much less fruit than full sized trees, but they will produce enough to provide for a family's needs without wastage.
- Extended Productive Season – since you can plant more trees closer in together, you can have several varieties of the one fruit, that produce over different times in the season. This will give you fruit over a longer period, rather than having one tree producing for only a shorter period. For example, instead of one apricot tree that produces mid season, you can plant three different varieties in the same space, and early, mid and late season bearing apricot tree. This will give you an adequate supply of fruit over an extended period rather than a huge amount all at once. Plus you get a range of different varieties to make it more interesting!
- Ease in Harvesting – you decide how tall the trees grow, many choose to keep them as high as their arm will reach, so you can simply walk past and pick the fruit at your leisure.
- Ease in Maintaining – when the tree is not much taller than you are, tasks like spraying, pruning an netting are fairly straightforward tasks that don't require any fancy equipment to accomplish.

Function - The functions of a plant guild can be of benefit to humans, wildlife, and the plants within the guild as per the citrus support guild. There is no fixed guild with every backyard having a different set of influences the most successful guild will be different in each situation.

Function Guide Words

Edible - Medicinal - Companion - Beneficial - Masking and Pest Confusion.

Nitrogen Fixer - Mineral Accumulator - Carbon 'farmer'/Mulch Plant - Biomass for Soil building

Fodder - Forage - Insectary - Nectary

Ground cover- living mulch

Annual - Perennial

Canopy Shade, hardy native, low verge natives, etc.

Timber - Craft - Fiber - Fuel - Fun

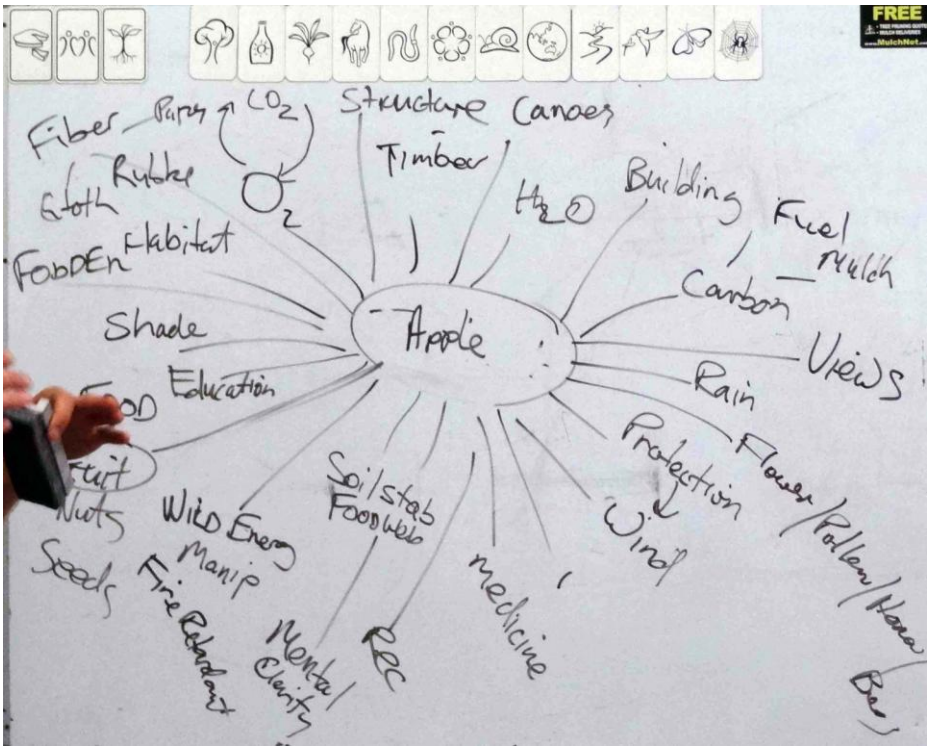
While there are rules of thumb to follow in the guild formations it is all analysis your 'space/niche', planning your desired result, and taking a best guess. Then its about planting your plants and waiting for natures feedback.

How to Start A Food Forest - Understand Plant Yields and Deliberate Design

Gardening should 90% thinking, observing, immersion and designing and 10% hard work.

Observe and Understand Nature and Plants.

Take the time to mind map what a plant is and what it can offer, redefine yield.



An apple tree does far more than grow apples. Glancing back at functions and form guide words look more closely at what the tree offers.

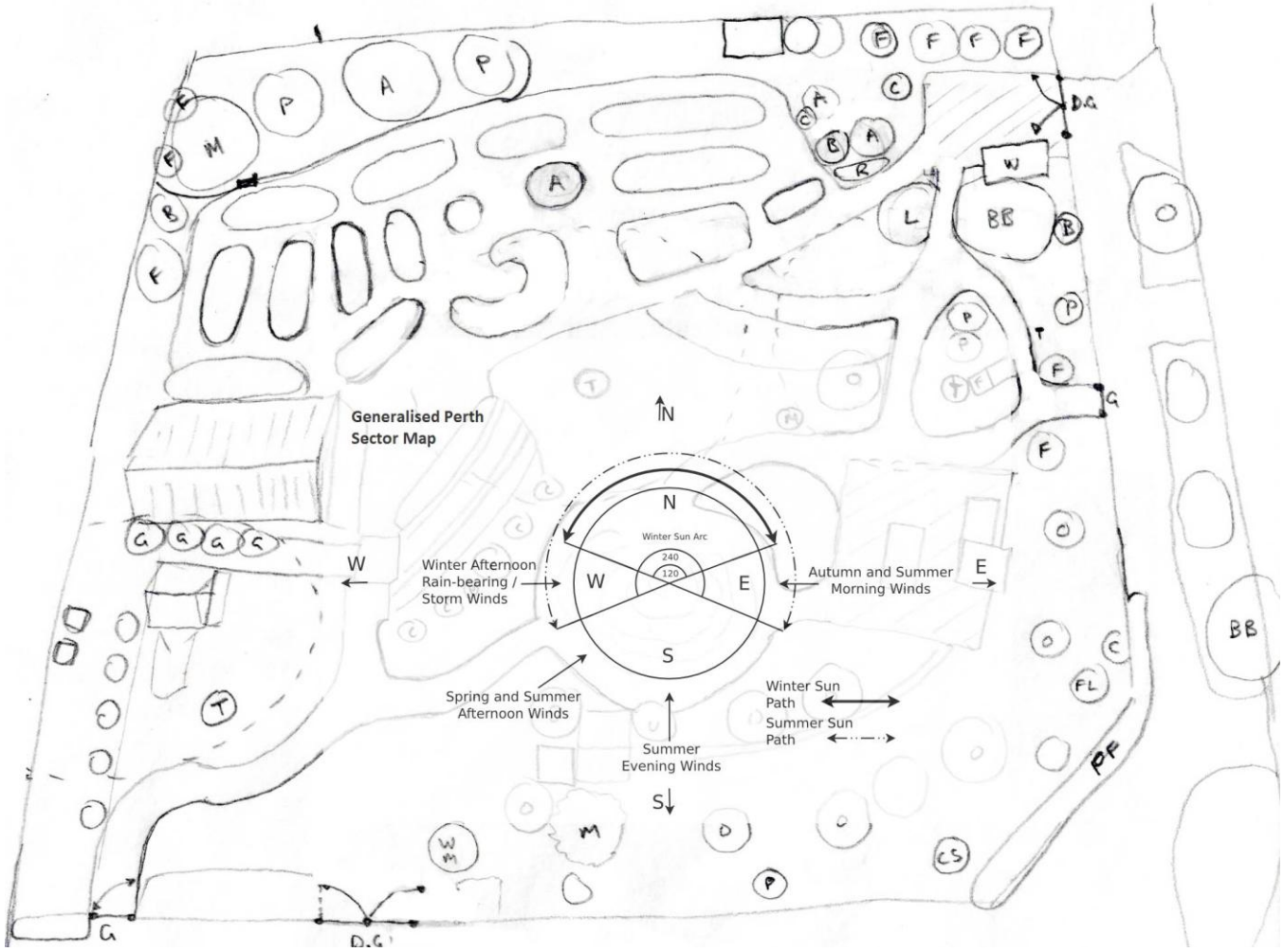
Deliberate Natural Design

Food forests are a design system encouraged by permaculture because it is intelligent bio-mimicry. Copying natures tried and tested productive systems but adapting them to the combined needs of humans and nature. To 'unnaturally' but intelligently design like nature we must base our decisions on natural limiting factors. We do this by looking at our yards and gardens and defining every square meters inherent (humans do nothing) characteristics (shade/sun/dry/hot).

We want to design a system that could survive without a lot of human management (work) and offsite resources (money and stuff), it will require both to set it up as we are 'fast tracking' natural succession (10 not 100 years to grow a forest), but it is following natural patterns so we are working with nature not against it. A rose garden is designed to look the same every year, every season, healthy natural systems must change or problems start to occur, the more we stop change the more work is needed.

Without going into huge amounts of detail on permaculture design process (*please head to Terra Permas website Free Workshops to find all that background information*) a design for your block should look at; Sun angles (winter/summer), shade and sun spots, wind, water flow, human habits and pathways, permanent existing structures, distance from the home and your needs.

Once spaces characteristics are know we can start to look at creating a Plant Guild to suit those conditions. We might just look at this but more likely we will also consider; what type or purpose do we want this group of plants to have, what shape must they be to fit the space and share the resources, what do we want/like and what timeframe are we working with.



Joondanna CG Aerial view layout map with generic sector analysis inlay.

Soil is a critical factor in successful plant growing but we will always be improving soil so it does not 'decide' where we grow initially.

Analyses your systems and spaces and deliberately plan a **'best guess'** at plant systems based on the characteristics of the space, needs of the human, form and function of guilds and deliberate avoidance of resource competition.

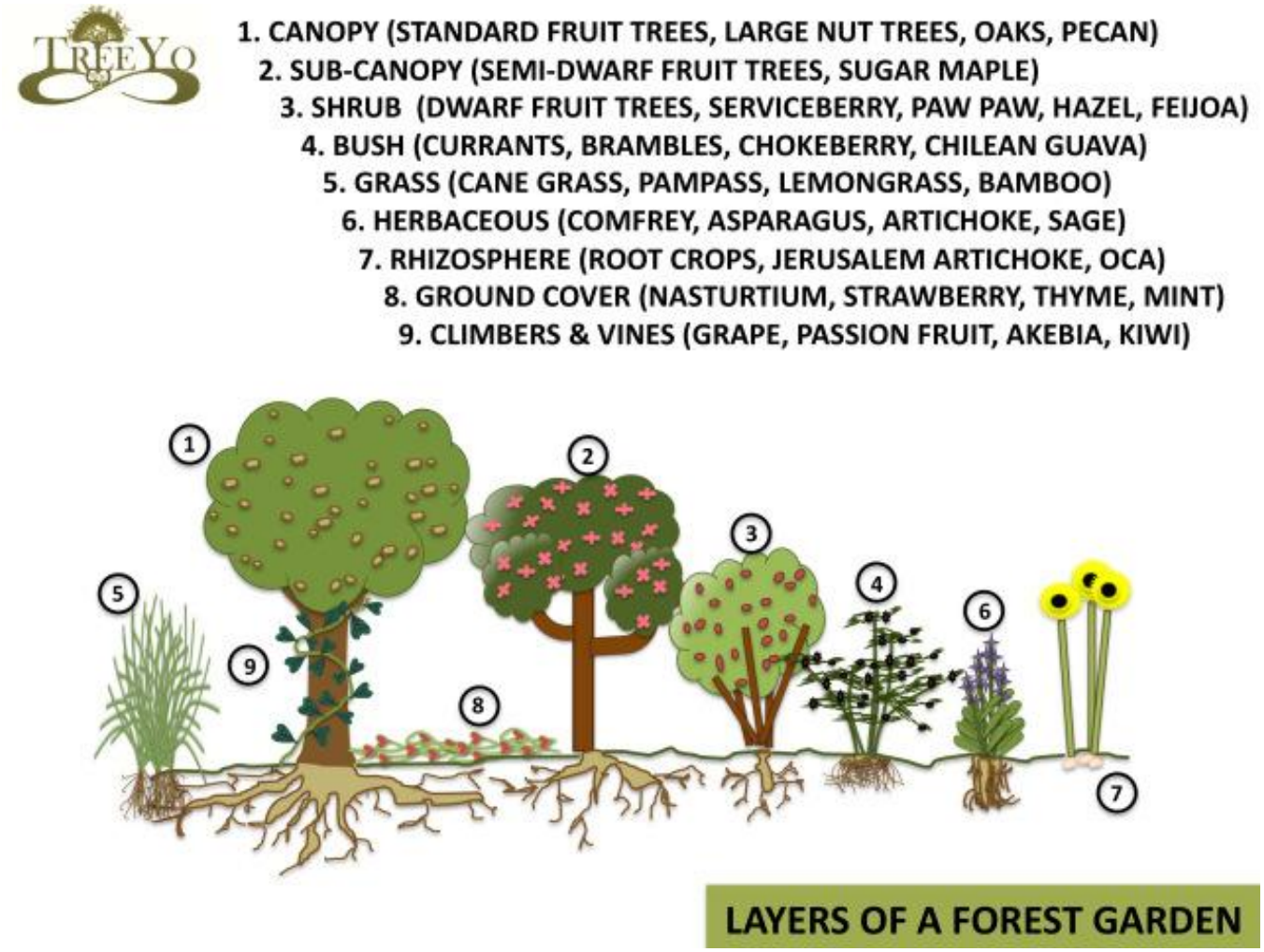
Small leaves with big leaves, tall and short, shallow root and tap root, annual and perennial, deciduous and evergreen. Deliberate selection of diverse range of plant families to avoid common mineral needs and pests. Deliberate selection of plants to support the main cropping plant or function. Some example guilds are given later.

Often (as is the case for JCG) plants are put in the some thought and best intentions at the time but later when you finally start to plan, or see how big they get you realise changes are needed. Transplanting mature trees will set them back more than is desired in Perth (we want deep strong roots) so consider how you can prune and shape existing trees to make their new form suit your space. We will be pruning so olive trees to try and grow them up intoa dappled evergreen shade. They will then function a bit like a small gum tree. We will need to container garden underneath them (as they have very vigouros root plate) but we will gain the space, the shade and the ecological benifits of any big tree (ripe fruit may fall to the ground or go to birds).

While not covered much in the workshop it is well worth upskilling in the areas of tree pruning. Different trees resond differently to pruning at different times of year, the more we know about nature the more we can shape it to meet our needs while still be natural.

Food Forest Layers in More Detail *(Adapted from VEG and other sources more local work needed here)*

Let's start from the canopy and move down with some suggested species for the backyard. The canopy of the food forest is usually the fruit trees. In tight urban spaces canopy is often deciduous, allowing winter light through to layers below. Evergreen trees are included but kept small or seasonally pruned or at the southern borders of the area.



TreeYo Permaculture has an excellent website - https://treeyopermacultureedu.wordpress.com

Tree Layer (Urban Canopy/Sub Canopy)

Fruit and Nuts

Generally a highly productive small urban food forest will have fruit trees as its canopy ranging from 3 (apricot/citrus) to 6 meters tall (Avocado/Macadamia/Pear). The main considerations here are deciduous or evergreen as this changes the understory dramatically, also can we have a 6 meter canopy and a 3 meter canopy or just start at 3m. These trees will normally offer relief to the productive understory during summer and may drop their leaves of be pruned to keep the understory productive in winter.

The water and soil fertility needs of the main tree in each space/guild should generally match the needs of the chosen guild understory. The idea of water and fertility zoning is common when planning the spaces/guilds within your food forest space.

Nitrogen fixing plants - Plants for Plants

Wild forests almost always include nitrogen-fixing species. In many food forest systems (especially larger ones where we need to improve the soil) we can intersperse fruit trees with nitrogen-fixing small trees and shrubs such as acacias, alder, leucaena or tree lucerne (tagasaste). Many recommend using the latter only in urban areas where it will not spread. These plants provide bird habitat, nitrogen, mulch, and chook fodder (some have edible leaves and seeds) to the system. Pioneer nitrogen fixers especially Tag will engineer themselves out of the system as fertility increases and they are not 'needed'.

In a smaller area you may design these (generally short-lived) species as sacrificial, destined to fill in space and improve soil, and then be removed or heavily seasonally pruned as the fruit tree canopy matures and closes. In the mean time, they can be considered 'nurse trees' – as well as nitrogen-fixing, they will grow faster than the fruit trees and provide shade and shelter for them. Springtime is a good time to 'chop and drop' – ie. heavy prune the nitrogen fixers, allowing the prunings to fall as mulch for the fruit trees, right were it's needed.

A establishing food forest (open soil) should be planted with mostly plants for plants to fix the soil.

Shrub and Bush layer

At the shrub layer some suitable herbs and companion plants include wormwood, southernwood, rosemary, lavender, hyssop, lemon verbena, citronella, scented geraniums, tansy and other shrub sized daisies and mountain marigold and all of which produce strong smells which are thought to confuse pest insects (and please us). The latter few examples also have flowers attracting beneficial insects. Edible shrubs include currants, gooseberries, cape gooseberries, tomatillos, goji berries, cherry and yellow guavas and blueberries (which require an acid soil patch).

Cane/bramble berries like blackberry cultivars and raspberries can be included – but these berries require training, annual maintenance and probably netting, so give them a discrete area.

Herbaceous layer

Moving down into a herbaceous layer, some edibles include globe artichoke, pepinos (a prolific melon-flavoured fruit), rhubarb, asparagus, perennial silverbeet, mints, french sorrel, stevia and horseradish. Companion plants at this level include comfrey, a classic for it's deep roots and nutrient accumulating capabilities, and medical uses; borage is a relative with similar properties. Lemon balm, yarrow and calendula are useful medicinal and companion plants. Alliums such as perennial leeks, angled onion and garlic chives provide strong smells for pests and good flavours for us.

If edible weeds such as fat hen, dandelion, amaranth, mallow, sow thistle, purslane, fat hen or chickweed want to grow, feel free to let them! They won't overwhelm a food forest like they might a veggie patch

Ground covers

At the ground cover level, some edibles include strawberries (especially the rapidly-spreading alpine strawberries), warrigal greens (aka New Zealand spinach), nasturtium (also a good companion plant around apples and pears), scurvy weed (a native), chamomile and sweet violets.

You might include sage, thyme and prostrate rosemary in sunny areas. Natives such as convolvulus species, prostrate grevilleas, native spreading daisies, pigface and other succulents can be used in hot dry

areas, most of them having companion plant values for bringing in beneficial birds and insects. Alyssum is a good beneficial-insect-attracting plant to have in the mix.

Climbers

Climbers you might consider include scarlet runner beans (the 'seven-year' bean – they reshoot from their base each year). Passionfruit, chokos, dragonfruit, grapes and kiwis (struggle in Perth) could be considered if you have large deciduous trees for them to climb up, or walls or pergolas to cover but are normally to large to be a 'food forest vine'. In summer, Climbing spinach, winged bean or gourds and curcubits (chilacayote, slipper gourd, Trombonchino, mouse melon, luffa ,new guinea bean) add to this list. Also consider trellising sweet potato.

Root crops

Annual plants that will disturb the roots of the perennials when harvested like potatoes, are generally not appropriate in the food forest, but you can grow carrots and parsnips in bare patches in food forest. Sweet potato while it tends to smother other understory its tubers can generally be harvested as the soil bulges without much damage, some tubers should be left to rot as insitu 'compost pots'. Allowing carrots, parsnips and anything in this family to go to flower (this includes fennel, dill, celery, coriander, parsley, angelica) brings in beneficial insects. Winter active or perennial onions and garlic species can be included.

You can grow Jerusalem artichokes in a sunny edge – try them in buried pots. Yacon is a sweet root crop in the same family. Edible canna lilly (arrowroot) make for a great border plant, stopping the growth of runner grasses.

Planning your food forest and Preparing the Ground

When you are happy with the location of your food forest, this might be a rough implementation order:

- Soil improvement, trees other than pioneers need water and minerals to produce and thrive. Perth soils are sandy and need to be clayed, stable organic mater added (mature compost/cocopeat/biochar etc), remineralised (rock minerals and kelp) and surface mulch of woodchips.
- Water systems – After clay and organic mater goes in the soil it can then hold water, putting down irrigation or passive greywater systems (food forests can be a good spot for greywater to go) Try to capture passive water harvesting off driveways etc. where possible, and these micro-earthworks have to happen before planting.
- Weed suppression – if you have runner grasses (esp. couch or kikuyu) or any other particularly troublesome weed, you will want to thoroughly suppress these before planting, or you may never be rid of them!
- Compost and mulch – while you can gradually build your own fertility on-site through legumes, food forest strategies, chooks and composting, it usually it makes sense to bring in some compost and mulch to fast-track soil improving.
- Planting time! Winter is often a good time as you can get bare-root fruit trees.
- Maintenance and pruning – the first two or three winters are especially crucial for developing the form of your fruit trees. You may then focus more on spring/summer pruning to maintain the size and shape and fruiting of your fruit trees. Pruning back overly vigorous plants is one of the main maintenance tasks of the food forest. Most of the rest is harvesting!
- Evolution. You need to evolve faster than your systems so keep observing and interacting.
- Chooks and fruit trees make a great match! But unless your area is large you generally have to choose between a chook-orchard system with minimal shrubs and ground covers, or a food forest, since chooks scratch and eat groundcovers.

Sample guilds for food forests from Deep Green Permaculture's (Angelo).

Apple	
Nasturtium	Ground cover – repels codling moth
Chives, Onions, Garlic	Root zone – inhibits apple scab, pest repellent
Foxgloves	Herbaceous layer – stimulates growth, protects against fungal disease
Horsetail	Ground cover – anti-fungal
Bad Companions	*Grass, Potatoes*
Apricot	
Basil	Herbaceous layer – pest repellent
Tansy	Herbaceous layer – pest repellent
Southernwood	Herbaceous layer – pest repellent
Chives, Onions, Garlic	Root zone – inhibits apple scab, pest repellent
Comfrey	Herbaceous layer – dynamic accumulator of potassium, natural fertiliser
Bad Companions	*Tomatoes, Sage*
Raspberries	
Comfrey	Herbaceous layer – dynamic accumulator of potassium, natural fertiliser
Tansy	Herbaceous layer – pest repellent
Yarrow	Herbaceous layer – pest repellent
Bad Companions	*Blackberries, Potatoes*
Citrus	
Guava	Canopy layer – beneficial companion plant
Nettles	Herbaceous layer – pest repellent
Garlic	Root zone – pest repellent
Horseradish	Root zone – prevent root diseases
Bad Companions	*Grass*
Peach/Nectarine	
Garlic	Root zone – inhibits leaf curl, pest repellent
Southernwood	Herbaceous layer – pest repellent
Basil	Herbaceous layer – pest repellent
Tansy	Herbaceous layer – pest repellent
Chamomile	Ground cover – stimulates plant growth
Comfrey	Herbaceous layer – dynamic accumulator of potassium, natural fertiliser
Bad Companions	*Tomatoes, potatoes*

Pear	
Borage	Herbaceous layer – increases general health of plants
Clover	Ground cover – adds nitrogen to soil
Comfrey	Herbaceous layer – dynamic accumulator of potassium, natural fertiliser
These plants increase the growth and health of other plants:	
Borage, Chamomile, Foxglove, Valerian, Yarrow	

Perth Seasonal Food Cropping and Fruit Trees from *2011-2012 at Jettos Patch Maidavale, Perth.*

AUTUMN -

MARCH -Lemons, Figs, Rhubarb, Jujube, Passionfruit, Bell Apple, Red Globe Grapes. Barbados Cherries, Lillypilly, Pomegranate (wonderful), Grapefruit (Marsh's Seedless), Crab Apple,Passionfruit, Mango, Elderberries, Red Globe Grapes, last Blueberries, Pears, Tamarillos, Almonds, Peanut Butter fruit, Miracle fruit, Watermelon

APRIL -Lemons, last Figs, Rhubarb, Passionfruit, Bell Apple, last Red Globe Grapes, Barbados Cherries, Lillypilly, Pomegranate (wonderful), Grapefruit (Marsh's Seedless),Passionfruit, Mango, Elderberries, Red Globe Grapes, last Blueberries, Pears, Tamarillos, Almonds, Bananas, Quince, limes, apples

MAY

Lemons, Grapefruit, Guava, Feijoa, Lillypilly, Pomegranate, Rhubarb, Jujube, Limes, Midginberry, Mandarin, Barbados cherry, Pineapple, Bananas, Tamarillos

WINTER -

JUNE -Lemons, Grapefruit, Guava, Pomegranate, Rhubarb, Limes, Lillypilly, Jujube, Feijoa, Tangello, mandarin, Valencia Orange, lemonade, Medlars, Seville Orange, Cumquats, Dragonfruit, Bananas

JULY- Lemons, Pomegranate, Rhubarb, Guava, Limes, Lillypilly, Jujube, Grapefruit, Feijoa, Tangelo, Mandarin, Valencia orange, Lemonade, Cumquats, Medlars, Bananas

AUGUST- Lemons, Grapefruit, Limes, Cumquats, passionfruit, Bananas

SPRING -

SEPTEMBER - **Lemons**, Alpine strawberries, Strawberries, Loquats, Rhubarb, Limes, Grapefruit, Mulberries

OCTOBER- Lemons, Alpine strawberries, Strawberries, Loquats, Rhubarb, Limes, Grapefruit, Mulberries, winter passionfruit, Bananas, Tamarilos, Fingerlime, Misty/ Nellykelly blueberries

NOVEMBER - Lemons, Alpine strawberries, Strawberries, Rhubarb, Limes, Blueberries, Cape gooseberries, Cherry plum, Apricot Newcastle, Peach

SUMMER

DECEMBER -Lemons, Alpine strawberries, Strawberries, Rhubarb, Barbados cherries, White Sapote, Ladyfinger grapes, Limes, Blackberries, Bramble berries, Blueberries, Cape gooseberries, cossack pineapple, Nelly Kelly black grafted passionfruit, Silvanberry, thornless blackberry

JANUARY- Lemons (Eureka), Rhubarb, Figs (Black Genoa), Passionfruit (Nelly Kelly black grafted and Tutti-frutti), Strawberries (Red gauntlet), Lady Finger grapes, cape gooseberry, cossack pineapple, Blueberry (northland), thornless Blackberry, Boysenberry, Heritage Raspberry, Barbados cherry

FEBRUARY- Lemons, Figs, Rhubarb, Jujube, Passionfruit, Bell Apple, Red Globe Grapes, Barbados Cherries

NOTE: Before choosing fruit trees you need to ask about Chill, Pollination and Pest Protection.

Plant Groupings - Guilds - you could try to arrange based on the Sun

Dry Mediterranean Food Guild

Mulberry, Fig, Quince, JubeJube, White Sapote, Dragon Fruit, Tulsi, Perennial savory, Kale, Inca berry, Dandelions, Sweet Potato, Garlic Chives, Sage, Parsely,

Chop and Drop Mulch and Fertility Guild

Existing Pepper Trees, Luecenea, Tagasaste, Bana Grass, Caprosma, QLD Arrowroot, leaf Mustard, Borage, Comfrey, Yarrow, sweet potato, nasturtiums.

Narrow Fence Trellis Guild

Passion fruit, choko, sweet potato trellised up, espalier fruit trees.

Aquatic Guild - Ponds

Elder flower, Water Hibiscus, Bull rush, Pickeral Rush, Milfoil, Brahmi, Water Chestnut, Nardoo, Azzola, Duckweed, Water Parsley, Water cress.

Hot Summer North House Face Shade Guild

Gleditsia, Poinsettia, Jacaranda, White Cedar, Accerola, Cherry Guava, Pomegranate, sweet potato.

Chicken Run Guild

Mulberry, Leaucena, Tagasaste, wattle, QLD arrowroot, chook herbs - Comfrey, wormwood, tree kale, dandelions.

Full Shade Guild

Clear water ponds, Fungi mulch zones and Mushroom logs, violets, monsteria, worm farms, cold compost, wood storage and sheds. Productive plants wont grow where there is no light.

Insectary Guild

Tree Hibiscus, Elder flower, Klip Dagga, Sunflowers, plants going to seed - mustard, broccoli, carrots, dill, coriander, parsnips, rue, tulsi, basil, garlic chives, yarrow, alyssum, any perennials herbs, dandelions. Seasonal flowers.

Low Hedge Guild

Strawberry Guava - Yellow or Red, Chilean Guava, Midyim (ground cover), rosemary, sage. Blueberries, Caprosma, wormwood.

Tall hedge Guild

Pineapple Guava, Fig, Olives, Grevillia, Bottlebrush, Finger Lime.

Wet Sub Tropic Fertile Guild

Sugar Cane, banana, pawpaw, ginger, tumeric, galangal, comfrey, custard apple,

Wicking Pot Guild

Central hungry plant (tomato), inner ring perennial crop (Orach, kale, basil, salsify), outer ring plucking greens (parsley, lettuce, mustard, coriander), cascading vine (climbing spinach, sweet potato, mint).

Permaculture Plants by Jeff Nugent and Julia Boniface, is a great book for this from WA.

Choices here are restricted by yard size, fruit fly issues, harvest practicality, chill and heat tolerances, etc. Its just my best guess and you should find many more in each group.

Canopy Trees (E = evergreen) - *I*cecream Bean, Mango, Avocardo, Accacia cyclops, all Accacia sp large (consult lists), Grevillia Robusta, Macadamia, Olive (Kalamata (fruit drops), Carob, Bamboo, Leucaena spp, Albizia sp, Pistachio

Canopy Trees (D = deciduous) - Pecan, Gleditsia, Robinia, Poinciana, Jacaranda, Tagasaste, Leucaena spp, Almonds, Chestnut (prickly nuts), Crab Apple, Manchurian Pear (graft lower limbs), mulberry.

Sub Canopy (E and D) - Most fruit trees see other lists. Even large fruit trees above can be kept to this size for netting and harvesting or by buying 'dwarf' variety trees.

Shrub and Bush (larger herbs) - Wormwood, southernwood, rosemary, lavender, hyssop, lemon verbena, citronella, scented geraniums, tansy and other shrub sized daisies and mountain marigold and all of which produce strong smells which are thought to confuse pest insects (and please us). The latter few examples also have flowers attracting beneficial insects. Edible shrubs include currants, gooseberries, cape gooseberries, tamarillos, tomatillos, goji berries, cherry and yellow guavas and blueberries. *Most fruit trees can now be kept this size by buying super 'dwarf' variety trees.*

Herb and Grass - Edible weeds such as fat hen, dandelion, amaranth, mallow, sow thistle, purslane, fat hen or chickweed will grow for free. Globe artichoke, pepinos, rhubarb, asparagus, perennial silverbeet, french sorrel, stevia and horseradish, comfrey, chicory. Lemon balm, yarrow and calendula, perennial leeks, angled onion and garlic chives. Grass is there due to free sunlight, its is adding carbon to the soil and tying loose soil together, it might be annoying but it will be there at the start, juice it :)

Ground Cover - *Sweet potato, Nasturtiums,* strawberries, warrigal greens (aka New Zealand spinach), scurvy weed (a native), camomile and sweet violets. Mint if your brave, sage, thyme and prostrate rosemary in sunny areas. Natives such as convolvulus species, prostrate grevilleas, native spreading daisies, pigface and other succulents can be used in hot dry areas, most of them having companion plant values for bringing in beneficial birds and insects. Alyssum is a good beneficial-insect-attracting plant to have in the mix.

Root Crops - Sweet potato, yacon, ginger, tumeric, yams, spuds, radish, beets, peanuts, artichokes, asparagas, etc. Things that grow you main crop sub soil.

Fungi - You might inoculate shitake logs, or introduce forest mushrooms and other edibles into the wood mulch and litter. NOTE: many fungi will already be there, may be toxic, and they are feeding your trees(not you) so I would leave soil to the native fungi.

Climbers - Passionfruit, chokos, dragonfruit, grapes and kiwis (struggle in Perth) could be considered if you have large deciduous trees for them to climb up, or walls or pergolas to cover but are normally to large to be a 'food forest vine'. In summer, Climbing spinach, winged bean or gourds and curcubits (chilacayote, slipper gourd, Trombonchino, mouse mellon, luffa ,new guinea bean) add to this list. Also consider trellising sweet potato.