De-lawning The Front Yard

www.underthechokotree.com
Sustainable Living in the Suburbs

By Nev Sweeney

The inspiration for this eBook was provided by Vera Meyer in her presentation entitled "The Front Garden" to Permaculture Sydney west (7/2/2022)

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1.0 Introduction: The What and why of Delawning

The great Bill Mollison himself referred to lawns as 'green cancer' and while I am not sure I totally agree with his summary there are certainly issues with the ubiquitous Australian suburban front lawn. Regardless of what we do in our back yard, most of us living in suburbia maintain a front lawn. Where I live here in St Clair, 90% of dwellings have a front lawn, with the odd bit of shrubbery to break up the monotony but lawn is the front yard ground cover of choice. So, what are the problems associated with that?

Our place prior to Delawning

Lawns are consumptive rather than productive

Most front lawns do not produce anything but grass clippings (which usually wind up in the green bin or being dumped) and in return for this leafy bounty they require of us –

- Fertilising – apart from the cost and effort to apply chemical fertilisers, excess fertiliser winds up running off into our waterways where they cause pollution and result in algal blooms which strip oxygen from the water when they die and decompose, harming or killing aquatic life, including fish.
- Watering – Australia is a drought country and water is precious, 40% of household water is used outside the home including to keep lawns happy and green. Again, if the lawn is overwatered, as well as water wastage, runoff can result in more pollution as mentioned above.
- Weeding and pest control – More often than not weeding is carried out chemically resulting in more polluted runoff and possible damage to beneficial insects.
- Mowing – unless push mower or sustainably charged electric mover is used, the result is noise, fossil fuel use and greenhouse gas production.

One lawn more or less is not the issue, but when all taken into account, about 11% of Australian cities are covered by lawn, equating to 4400 hectares, the size of the problem becomes clear.

Lawns are a monocultures, not biodiverse

Urban sprawl as experienced in our suburbs is destroying habitat at an alarming rate, taken into account that nationally 25% of Australia's threatened plants and 46% of threatened animals can be found in our cities towns and suburbs. The front lawn is a part of this destruction, there is nothing much on the front lawn for insects, bats, birds or other animals. They are a monoculture, not supporting the diverse ecosystem we need around us to thrive.

The Great Australian Front Lawn (complete with cow!)

Community

Unless you happen to see your neighbour mowing their front lawn, lawns do not generally support social interaction between neighbours or passers-by, they are just……lawns!

Amenity

I guess this depends on what you like to see around you. We like some privacy and our front lawn, as it was originally did nothing to support that. We looked out the front of our house to see…… more houses! Our lawn really did not provide a gorgeous vista to gaze upon, it provided grass.

Energy Saving

A front lawn provides open access for the sun and depending on your aspect this can be either a blessing or a curse. If your house faces east or west this can mean issues with summer heat gain, a northerly aspect can provide some winter warmth from the sun, but also provide unwanted heat during early and late summer unless the house is well designed.

And the Answer is?

The perfect way of dealing with the above issues is to, in the words of Vera Meyer: “de-lawn” your front yard! In simple terms this means, to a greater or lesser extent, replacing the grass of the front lawn with more useful and productive plant species and other fixtures.

2.0 What it Looks Like – Some De-lawning Examples

While de-lawning your front yard can be a 'one and done' exercise, in most cases it occurs over time with people gradually replacing the lawn with other things, and the journey is ongoing. Also, depending on the de-lawners requirements, some lawn may be left for specific purposes such as recreation and play. Following are some examples of how some people have delawned their front yard –

2.1 Under the Choko Tree

Here at Under the Choko Tree we have been de-lawning our front yard for years. It is a medium sized front lawn with an area of about 250m2, but it has enabled us to do quite a bit. To improve the productivity (among other things) our focus has been on perennials but that does not have to be the case for everyone and others have made use of annuals, as will be discussed later on. The Choko tree currently has the following productive plants in its front yard –

- Over 20 productive trees and bushes including fruit trees such as various citrus, olive, apples, mulberry, feijoa. Fig, coffee and nectarine trees as well as productive leaf trees such as bay, curry leaf (murraya Koenigii) and kaffir lime (makrut).

Our Multipurpose Mulberry

Blood Orange, Fig and Dwarf Lemon

- Native trees and bushes such as lillypilly, tea tree (melaleuca alternifolia), banksia, midyin berry and callistemons.

Midyin Berry

- Perennial vegetables such as sweet potato, asparagus, taro, rhubarb, Okinawa spinach and spring onions.

Sweet potato

- Herbs such as tarragon, oregano, basil, lemongrass, rosemary, lavender and feverfew.

Our herbs in the herb spiral (wedding cake)

- A selection of annual insectary flowers that varies with the seasons.

Sweet Alyssum a great insectary plant

- Other miscellaneous useful plants such as native indigo, comfrey, thornless blackberry and macadamia nut.

Native Indigo

To address the issue of biodiversity, check out the plant list above! The larger trees including the mulberry, tea trees, olive, macadamia, curry leaf, lilly pilly and bay trees have created habitat for birds and our place is a bit of an oasis attracting a number of bird species. The flowering plants such as the insectary bed, melaleucas, lavender and the fruit trees attract a variety of insect pollinators and predators. To support the increase in biodiversity, we have also installed in the front yard two microbat roost boxes, a native bee hive, a self-watering bird bath and self-watering insect watering station.

One of the bat nesting boxes

Insect waterer and worm tower in centre of fruit tree circle

In terms of community, the growing part of our front yard has given us plenty of opportunities for discussion with friends, neighbours and passers-by about the various unusual plants we are growing. We have also installed a street library, community bench and fruit and veg street pantry at the very front of our front yard for the use of anyone who wants or needs those facilities, and they both get regular use.

Street library, community bench and street pantry

One of the by-products of our plantings over the years has been that with the large number and dense plantings of tall growing trees has been that when we look out or front windows, we mostly see green. The lounge room windows look out onto the fruit tree circle such that it is mostly what we see; and the bedroom windows, rather than looking out onto unbroken suburbia, provide us first with a view of many layers of plants with suburbia only being in the background.

The fruit tree circle is between the font window and the road

One of our early efforts at de-lawning as a strategy was to create a park-like area underneath the large mulberry on the northern boundary of the front yard. We covered the area with wood chips and installing a table/bench and kiddie swing.

Our front yard park

By providing more privacy and productivity, the trees in and around our front lawn have also reduced the heating effect of the summer morning sun, providing lower summer temperatures in the front yard. The big mulberry provides shading or the two northern bedrooms, generally resulting in reduced temperatures in those bedrooms particularly in the morning.

One other project which has certainly had a de-lawning effect, even if that was it its primary intent, has been the locating of over half (10,000+ litres) of our rain water storage capacity in our front yard. This not only reduces lawn area but means that we have sufficient water storage that goes a long way towards maintaining hydration for our front yard plants without need to use the reticulated water supply.

2.2 Greg and Vera

They are permaculture superstars have been delawning for years. Their suburban front lawn is only 12m2 but they have made it remarkably productive while still retaining an area for parking required by their vehicle.

Their front yard is planted with annual vegetables such as cherry tomatoes and pumpkins on occasion (and in no particular rotation); perennial fruits including citrus, mulberry and apricot as well as herbs such as fennel, Asian mint, basil and turmeric. To improve biodiversity, as well as the above productive plants, they have flowers for the bees and other pollinators such as alyssum and marigold and a couple of ponds providing water source for insects and frogs.

They also have some ornamental plants (buxus and jacaranda) which are pruned to provide organic matter, act as a scaffold for climbing productive species and to provide pleasant outlook and privacy. They use passionfruit, grown on a trellis covering the western side of the veranda, to reduce the heat of the summer sun coming into the house.

One other benefit of such a productive front yard has been the opportunity that it has created to share the fruits of their labour and their experience with neighbours and people walking past. Their front yard is such a beautiful and productive space that it easily attracts the attention of people in the area and opens opportunities for providing interaction with their local community.

And along the drive-way

And further up the driveway …

Behind the Buxus hedge, aka Summer pumpkin support system, our wood for next winter makes an attractive low barrier between neighbours

2.3 Angie and Deniz

These two are comparatively new to the game but show what can be achieved in a relatively short time. The have a terraced, two level lawn and they have de-lawned the lower terrace which is approximately 75m2. They have also gone with a mixture of perennials and annuals.

Perennials include: various productive trees including citrus, a cherry and a curry leaf; herbs including dill, (lots of) comfrey, oregano and lemongrass. Rhubarb and a passionfruit vine are also included. Annual veg includes various brassicas, zucchini and tomatoes.

Before starting

As things develop

Later on

3.0 Tips for Your De-lawning Project

Having discussed the benefits of de-lawning, and how others have de-lawned in the past, here are some hints on how you can develop your own de-lawning project -

1. It doesn't have to be all or nothing – you don't have to go out and rip up all your lawn tomorrow. It can be a staged thing over time, replacing parts of the lawn as it becomes feasible. You also don't have to replace the whole lawn, but the more you replace, the bigger the benefit.

De-Lawning can be an ongoing process

2. Grow attractive veggies – There are lots of vegetables out there that not only taste great, but look attractive too. There are books and websites devoted to the concept of edible landscaping, "The Complete book of Edible Landscaping" by Roslind Creasy is one worth considering. For example deep purple eggplant, bright capsicum, giant globe artichokes, frilly kale, and rainbow chard are not only productive and tasty but have great visual appeal as well.

3. Keep sprawling plants under control – Climbers and ground covers such as zucchini, cucumbers, squash and tomatoes can easily get out of hand. This not only is confusing to the eye but can also impact other vegetables growing in the area. It can make harvest by you, or your neighbours, very difficult. Contain them in a raised planter, give them some vertical space by providing attractive structures to ramble over.

4. Let some of your edibles go to flower – this will have a number of benefits. Some veggies such as artichokes and chives have attractive blossoms, adding beauty to the garden. Also, allowing veggies to flower attracts pollinators to your garden, improving biodiversity and increasing productivity of your fruiting veggies. It also gives you the opportunity for saving your own seeds to provide a free feed next year.

This carrot flower is edible, insectary and the same as Queen Anne's Lace

5. Attract more birds and butterflies – This can be achieved planting a variety of trees and bushes with a variety of foliage types and heights. Including productive native species too will help attract our native birds. Planting fruit trees such as apples, apricots, citrus, nectarines, plums and pears may also attract butterflies and birds. Birds are great concentrators of fertility' adding a nitrogen rich manure to your front garden. Both birds and butterflies will not only add colour to your front yard but birdsong will also provide a calming feast for the ears as well.

6. Add a dwarf fruit tree and/or fruiting bush – they will stay small when planted in the ground, in large pots or espaliered against a fence. They can, for a very small space, improve the productivity and variety of produce available, and with a bit of planning spread the harvest through the year. A fruiting shrub like a blueberry bush can provide privacy, greenery and berries

Our dwarf nectarine

7. Ensure year 'round interest – avoid the end of summer syndrome, incorporate productive and attractive evergreens and perennials will maintain interest and productivity throughout the year. If you are planting annual vegetables, give consideration to succession planting (sowing crops every few weeks to spread the harvest) Adding structures such as bird baths and a street library will also provide year round visual interest.

Our microbat nest box

8. Encourage biodiversity and interest by adding water to the garden as a bird bath, insect water or water feature. Nothing will attract birds and beneficial insects to your garden like the offer of water on a hot summer afternoon. They will come for a drink, but stay to feed on pest species and help pollinate your fruiting crops as well. While we are at it, consider installing a bug/bee hotel and/or microbat roost box.

9. Throw away those chemical pesticides – Leave your beautiful and productive front yard to develop its own ecosystem, which will keep many pests in check. Work with nature to set up a system of growing, leaving out pesticides which will kill many beneficial insects as well as contaminating all of that beautiful and tasty produce.

10. Hide your tools – Leaving unused tools, pots and wheelbarrows (unless they are planted with flowers and designed as a feature) hanging around give the front yard and untidy look so clear them away after use.. The visual feast of all this productivity will go together to attract the eye friends, neighbours and passers-by alike.

11. Share the bounty – One way of generating interest from your friends and neighbours is to share the dividends from your productive front yard around. You can set things up so that they can harvest themselves from the front of your property.

Consider installing other attractions such as a community bench for them to sit and rest while they look at your progress or street library to share surplus books with your neighbours.

12. Add some colour – for the birds, the bees, and the humans! Planting beds or areas with annual flowers not only adds beauty to the garden, but flowers like alyssum, heartsease and zinnia not only attract beneficial insects they also produce edible flowers.

4.0 Assessing Your Front Yard

As I mentioned in earlier, Bill Mollison referred to lawns as ‘green cancer’ and while I am not sure I totally agree with his summary there are certainly issues with the ubiquitous Australian suburban front lawn. Regardless of what we do in our back yard, most of us living in suburbia maintain a front lawn. Where I live here in St Clair, 90% of dwellings have a front lawn, with the odd bit of shrubbery to break up the monotony but lawn is the front yard ground cover of choice. In summary, the issues with that are –

- Lawns are consumptive rather than productive – that is to say, they consume resources (time, money, fertiliser) and produce nothing but grass clippings, which are often dumped rather than used.
- They are monocultures, and we weed out (literally) any biodiversity which would support bees and other insects, birds etc.
- They do not support community and can act as a barrier to it.
- They are just bland green spaces to look out on, rather than providing beautiful and diverse views from our front windows.
- They can leave the house open to the full blast of the Australian sun, rather than providing protection and cooling.

So the idea is to de-lawn your front yard, and turn it into a productive and biodiverse space that is also beautiful. Section three of this eBook provides some hints on doing your own de-lawning project, but conducting an assessment prior to starting will give you an idea of what you have to work with. How do you do an assessment of this kind?

I'm glad you asked!

4.1 Things to consider when Assessing the Front Yard

Before rushing straight out and starting, or even making any big decisions on what goes where, spending a bit of time to assess what you have and what your options are, then using the assessment to develop a plan is a good thing. It reduces the likelihood of mistakes and allows you to make the best use of resources (time, money, and people) to achieve the desired outcome from your de-lawning project.

To help you out, I have developed a Front Yard De-lawning Assessment Form (See Appendix one) and method to walk you through the process and prompt the things you need to look at.

Vision: This is the part where you can record what you want to get out of your front yard/garden and obviously it is best if you can do this up front. Once you can articulate what you want, it is possible to work backwards from that and develop a plan to deliver as much as you can of your vision.
Some things to think about include:

- how much lawn needs to go and will it be all at once or a staged process?
- What plants and structures do you want to install or retain?
- What are the overall aesthetics you wish to achieve? Manicured vegetable garden, chaotic bush garden or something else?
- What does the family want? (It will be important to discuss this idea with them and get their input before 'breaking ground' as well).

Date: This draws the line in the sand so you know when you did your assessment, you may wish to look back on it or amend it in the future, so having an idea of when it was done can be handy.

Grass Species (if Known): Is the lawn buffalo grass, a slow growing and relatively non-invasive species, or kikuyu, a grass that will toss you out of your house and take over given half a chance? Or is it somewhere in between? Is it a mixed sward? It is handy to work out what species you are dealing with at the assessment stage so that effective ways of dealing with them can be included in your planning.

Kikuyu gets into everything!

Buffalo is much more restrained.

Dimensions and area of the Yard and the area under lawn: one of the critical limiting dimensions of the design will be the area which you have to work with. The overall shape may be important too. A long and narrow yard may require a different approach than if it were square so having the dimensions as well as the overall area will be useful.

Fence type and height: any fencing or wall type will affect the impact of the sun, wind and rain on features planted close to the yard boundary. Whether it is brick, steel or wood, whether it is solid or has areas where sun and rain can get in like an old fashioned picket fence may be important to setting out what goes where and so is important to record. Also, do you have any privacy screening across the front yard or between you and your neighbours or do you want to add it in? This can be included in your plan later if required.

Soil: While it is possible to improve soil over time, it is handy to know what you are starting with. It is worth running a few qualitative or quantitative tests to check what you have to deal with and these can be broken down into three types – Physical, chemical and biological tests More details on each of them can be found in Appendix 2 on page 64. Generally speaking, a glass jar test will give you an idea on the soils' physical characteristics, a pH test is a good start on the soil chemistry and an

earthworm test gives you an idea of what the soil biota (or lack of it) is like. In a large yard there may be some variation in soil type across the yard.

Glass jar test for soil composition

Aspect: the direction the yard faces is probably the most critical non-alterable characteristic of the yard as a whole. Here in the southern hemisphere a south facing yard will mean considerably reduced direct sunlight. This will limit options for growing food crops but may still provide options for flowers or natives. Almost any aspect will allow some form of food production but the more favourable the aspect (i.e. closest to a north easterly aspect) the more productive the area can be.

Drainage and Slope: Does the yard have any slope, and if so what direction and how steep? The drainage into the land itself will depend upon the soil (which will be looked at later). A slope will drain water and cold air from high to low and the steeper the slope the faster the drainage of both fluids. If the slope is steep, some consideration should be given to retaining rainwater on the property with swales or terracing etc. Any earthworks required should be programmed in pretty early in the plan.

Water Access: if there is a tap right there in the front yard, as there mostly is, it will make things easier. But even if you do, what other opportunities to gather water are there? Do you have a front yard accessible rain water tank? Do you store water in the ground with existing swales? Does water enter your front yard from the neighbour's property and if so is it likely to contain pesticides, herbicides or chemical fertilisers. Similarly, do you lose water from your yard into the neighbours or into the gutter?

We have two front yard water tanks

Shade – shade may come from local trees (your yard, neighbours yard or street trees), other houses/buildings in the vicinity such that even with a good aspect the hours of sunlight may be reduced. The amount of shade will also vary with the seasons and this can be taken into account using a phone app like Sunseeker.

Prevailing Wind: some history of wind in the area will be important to the design. Surrounding buildings may also modify the direction a wind comes from. High winds will be hard on the more delicate plants causing both physical damage as well as drying plants out quickly and may necessitate designing in a wind break of some description. The Bureau of Meteorology site can be valuable for this, or if you want more local data keep an eye out for those home weather stations on one of the neighbour's rooves, or get your own!

Microclimate issues: by looking at the front yard and its environment as a whole it may be possible to identify particular microclimates such as warm and sunny or cool shady spots, a damp area which seems to catch the rain or an exposed area more subject to the wind than other parts. Identifying these issues at the start can allow the design to make the most of any existing microclimates rather than trying to overcome them.

The Road: This being the front yard, interfacing with the road will be guaranteed, and some consideration will be required as to how close the road is and whether it is a quiet suburban street or busy arterial road which might require some privacy/noise/pollution reducing screening. Traffic noise can reduce the amenity of the front yard by keeping up an annoying hum and air pollution from passing traffic can affect both the garden and the gardener. Also the heat island effect can mean warmer winters but also hotter summers. Needless to say, a corner block will have two roads to deal with!

We have 3 metres of verge between us and the road

Another consideration, particularly in terms of growing edibles at the front of the yard, is that if the property was developed prior to 2002 (in Australia) and near a busy road, there may be some contamination with lead. If the property is near a busy road it might be worth taking soil samples and having them tested for lead. This can be done

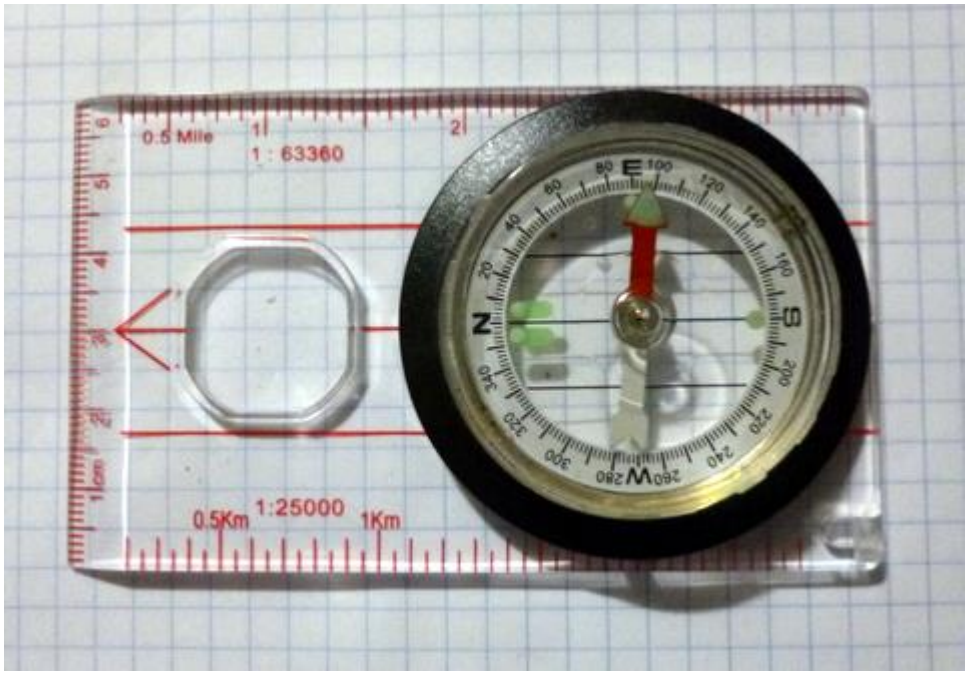
economically through VegeSafe , (https://www.360dustanalysis.com/) but even if lead is present, natives or other attractive plants can be used in that area to positively impact amenity and biodiversity.

Existing Materials, plants and structures: The stuff which is already there will have an effect on what new stuff you can introduce. If some of the existing stuff can be removed that is worth recording this. It will give you more space but before finalising your plan it is important to know what can be moved and what can't. The material of construction and location of paths and driveways should be noted and can either be retained or, replaced, with more porous materials to reduce runoff if required.

4.2 Conducting the Assessment

OK so you now have a printout of the blank assessment form on your clip board, and are ready to go.....maybe! At this point it is a good idea to collect the following things to help you record your data during the assessment –

A compass – an orienteering compass is good but in a pinch anything that shows you where north is, even if it is an app on your mobile phone. Don't guess which way you think the yard faces. Check it with a compass and make sure to note it down on the form. This will save lots of hassles later.



A tape measure – You will need to take the measurements of everything! The length and breadth of the yard itself can be paced, out but recording the dimensions of everything on it, where things are in relation to each other, will be made easier with a tape measure.

Digital Camera – Photograph everything! That will help you when you are working out where everything is and how much space you have to work with. Digital photos will act

as a supplement to your measurements and assist you to work out where everything is now, and where the new stuff will fit.

Spirit Level, Stakes & string – These can be used to measure the slope of your yard. Insert a stake at the highest and lowest part of the yard, bearing in mind that the top of the stake at the lowest point in the yard will need to be as tall as the stake at the highest point. Tie the string at ground level on the highest stake and then run the string down to the lowest stake. Move the string up and down the bottom stake until a spirit level held along the string shows it is level. Tie the string off and measure the length of the string (run) and the distance between the ground and the string on the lower stake (rise). Divide rise by run and multiply by 100 this gives you the slope percentage. (There is lots of info on the net showing you how to do this!)

Stationery – A selection of pens, pencils, plain, lined and graph paper is a great support for taking notes and sketches and drawing out ideas.
To conduct the assessment, first do a quick look over the yard to get the lay of the land, as it were. Then set to and take photos from as many angles as you can manage, with separate photos of any features which are to remain after the plan is put in place. Once things have been photographed within an inch of their life, take as many measurements as you can and draw up a mudmap of the yard and what is on it.

With all the data recorded you can starting putting together the plan.

5.0 Developing the plan

5.1 Introduction

Having completed the assessment of your front yard, it is now time to draw up a plan. Planning is one of those funny things, it is possible to plan so minutely that you never get anything done and it is also possible to just forge ahead blindly wasting effort and missing opportunities due to total lack of planning. Somewhere in between is a good place to aim for!

A few 'before' photos are a good idea!

Format

The plan which you put together will, obviously, look like your plan. For me, I like a plan that has a vision, general description of stages/activities and maybe a timeline plus plant lists and some form of map or diagram showing what the finished project may look like. The level of detail at each point will depend on what you are comfortable with and how much effort you want to put into the planning process.

Vision

Ideally, some form of vision has been developed prior to the assessment so you have an idea of how the de-lawning project will look when finished. With the assessment completed, it is perhaps a good time to review the vision and ensure that, considering what was discovered during the assessment process, it is still practicable.

Beauty

Seeing as this is the remaking of your front yard we are talking about, it is worth at least considering the beautifying aspect of the remake in your plan. If in the back of your mind you consider how the finished work will look from the street and include some productive plants that are also attractive plants in your plant lists. That may include –

Attractive veggies such as deep purple eggplant, bright capsicum, giant globe artichokes, frilly kale, and/or rainbow chard that are not only productive and tasty but have great visual appeal as well.

- Flowers that provide not only edibility and/or biodiversity but also look good, and at least in this case, the list is almost endless.
- Trees and bushes with attractive foliage like the lemon myrtle which has lemon scented leaves, the feijoa, which can make an attractive hedge and has lovely edible flowers and fruit and the lilly pilly which has attractive glossy leaves and colourful foliage as well as fruit.
- Also, an attractive structure can be a centrepiece of the whole front yard, as our herb spiral (or wedding cake) is for our place.

Hibiscus - Beautiful, edible and makes great shampoo!

It is worth considering the attractiveness of the plants and structures you are putting in at the planning stage. You could even put in themed areas into your garden where plants all have the same colour flower or foliage as an extra accent. The possibilities are endless!

5.2 Fixed Characteristics

While most things can be changed to improve the productivity of the de-lawned front yard, there are a couple that can't be changed and so when plans are being developed they will need to take these into account.

Aspect – this is the compass direction that the land faces. That is to say, which way the land slopes. Here in the southern hemisphere, the ideal aspect is northerly to north easterly as land with this aspect receives the most sun and access to the sun can be a limiting factor in growing productive plants. A friend of ours has a block with a southerly aspect and while they do have some productivity, they have to work harder to get it.

Shade – again, this is about sun access and to be sure, some blocks will be able to modify this if it is due to trees or bushes growing on the property. However, if it is due to vegetation on surrounding properties, solid fences or buildings like a neighbours two story house, particularly if these are to the north of the yard in question, it is likely that little can be done. The limitations on these shady areas should be built into the plan and rather than planning, say, an extensive tomato bed, look at understory plants which can be productive in partial shade, leaf crops or if the area gets little to no direct sunlight at all consider mushrooms.

5.3 Infrastructure

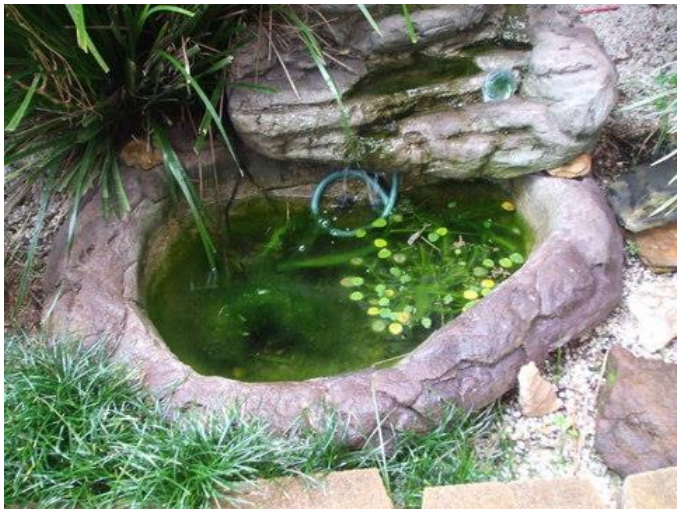
This is the stuff you need to do first, so that when it gets down to putting in other features like trees, veggie beds or natives, where they will go is already prepared to receive them, and set up to support their productivity.

The infrastructure that will need to be planned out at this point takes into account three aspects –

- Earthworks – including the de-lawning process itself.
- Water
- Soil

5.3.1 Earthworks

If your plan requires any earthworks, for example - terracing, ponds, raised beds or swales, it is easier to build these in at the start of the project and get them done first. Nothing worse than getting the sloping front yard nicely planted out then realising there were terraces to go in. If there is a timeline of some description, earthworks should be right up there at the start. The information identified at the assessment stage under the ‘drainage and slope’ section should make this stage of the plan easier.



Ponds can be multifunctional, but check your council rules

The De-lawning Process

Also at this point, decisions can be taken about the level of de-lawning that will be required. Remember, it does not have to be all or nothing, and it does not have to be all done at the start, it can be staged to fit in with your vision and resources.

De-lawning, or the removal of your lawn to facilitate replanting with productive species, can be carried out in a number of ways. One way which is not recommended is the use of chemical poisons to kill the grass in situ, particularly in this case because the de-lawned area will be used to produce food although it is not a really good idea at any time. Three more appropriate ways to achieve this are –

- **Solarisation** – this includes covering the area to be de-lawned in black plastic, weighted down with stones or bricks for 6 weeks in summer, then remove the plastic sheet and use a shovel flip the dead grass, the re-cover for a further couple of weeks.
- **Turf cutting** – either using a turf cutting machine or by hand. This removed the grass and roots as a layer, leaving the bare soil behind. The turf which has been removed can then be composted.
- **Layering** – similar to solarisation, it kills the grass by placing layers of cardboard and/or newspaper which is then wetted down and covered by a thick layer of mulch, which cuts the grass off from the sun and rain. It will take longer (up to 6 months) to have the desired effect but doesn't look bad while it is doing its job.

If you are in a hurry, hire a turf cutting machine or if the area is on the small side you could cut the turf by hand, if speed is not so essential then solarisation or layering would be the way to go. Be sure to allow for the required time and resources in your plan so that you can de-lawn when the time is right!

5.3.2 Water

If the intention is to grow (hopefully productive) plants and not just cover the de-lawned area with gravel, access to water will be paramount. This may just mean, particularly at the start, that you have a tap within watering distance of any planted out areas. Thinking longer term at this point and allowing space for water tanks will make it easier when you have the resources to actually put the tanks in place. So that takes care of two out of three water resources – reticulated water and rainwater tanks – but another option should also be considered at this point, storing rainwater in the ground.

Our main front yard tap

The three principles are – slow, spread and sink! Allow rainwater falling on your yard and perhaps even entering your yard from the neighbours if this was identified as a source during the assessment, to slow down, spread out and soak into your front yard rather than just running off into the gutter. This can be considered in tandem with earthworks to make sure the land forms support slowing, spreading and sinking of

rainwater. Planning of features such as swales, raingardens and permeable pathways will support this process.

A front yard rainwater tank can make irrigation easier

5.3.3 Soils

Before you look at what plants you want to grow, you need to have a feel for what your soil is like, is it clayey or sandy, acid or alkaline, alive or dead? Now is the time to revisit the soil tests you did during the assessment phase, or if you didn't get around to it then, do it now! You need to understand what you are dealing with, so a bit of research can be invaluable!

Soil pH test kits are cheap and available

You should include in your plans any work that will need to be done to improve your soil. If you have any concerns about specific issues like lead, get your soil tested for that as well.

In terms of amending your soil to make it more productive, there is one material that can be added to the soil which will tend to bring it back to a more productive state: well-made compost. However there are other things you can add as well –

- Sandy soil: add organic matter
- Clayey soil: add calcium sulphate (gypsum) to improve soil texture
- Acid soil: add an alkali like gardeners lime ie calcium carbonate or dolomite; wood ash will also help but the alkaline material is more soluble so likely to be leached out by rain
- Alkaline soil: add elemental sulphur or iron sulphate
- Soil lacking in biota: biofertilisers or Actively Aerated Compost Teas

Bioferiliisers and AACTs can be made on a small scale

There are simple home tests which will allow you to get a handle on what your soil looks like, (refer Appendix 2)but if you want more detail in your plan, it might be worth talking to soil test professionals who can, for a price, put a detailed profile of your soil together for you.
At this stage it is all about working out what it is that your front yard soil needs to be (more) productive, then putting a plan together to achieve just that, and integrating the requirements into your main plan.

5.4 Plants

5.4.1 Trees

Our front yard – view from the street

Here is another case where the planning process can prevent problems later (sometimes years later) on. The larger trees and bushes which you put in will be the most difficult to relocate if they were put in the wrong place. It is very good to research the larger plants that interest you and find out things like if they have invasive roots, how big they grow and how fast and if they are fruit or nut trees, do they need a pollinator or are they dioecious (separate male and female plants).

Planting a large species with invasive roots near underground services (eg electrics or plumbing) can cause problems later on, you first indication of problems may be the toilet backing up, which is unpleasant at the best of times. Camphor laurels, palms, many eucalypts and some figs can cause this problem.

It is REALLY important to make sure when you are deciding where they will be placed, that you take into account how big the plant will eventually grow rather than how big it is now. I am speaking from experience! Will the tree crowd out or shade parts of your, or the neighbours front yard or house. Our mulberry, a wonderful and multipurpose tree, has gotten large enough so that it can shade the solar hot water if that part of the tree is not pruned. Trees can be kept smaller by pruning, but the trick is to start out as you mean to go on, ie prune them regularly from the start rather than letting them get huge and then try to recover the situation by attempting to prune them back.

Mulberry in Summer

Mulberry in Winter

Many fruit and nut trees will need a compatible cultivar of the same species nearby to be fruitful. This includes pome fruit (apples, pears) and some stone fruit such as cherries and plums, which will need another compatible tree nearby to ensure fruiting. It is not enough just to have another cultivar, it must be the right cultivar. A little research at the start pays off with productivity later.

Some fruits like kiwifruit and carob trees are dioecious and will need both a male and female plant to produce. Years ago I bought a carob because my daughter had food intolerances, including chocolate. She had grown up by the time it flowered, but the look of the flowers concerned me so I went on the net, and sure enough we had a male tree, no carob for us!

Productive trees and bushes can take many forms, not just fruiting plants although this is a lovely way to make a front yard more productive. Shade trees to sit and relax under, trees and bushes which screen the view and reduce the wind, as well as natives for birds and insects, are all productive in their own way even if they do not produce

food. Of course, fruiting trees and bushes can also provide these services and multipurpose plantings are always a good idea.

5.4.2 Small Perennials and Annuals

Annual Vegetables – There are a huge number and variety of annual veg available to be grown from seed or as seedlings. For the most part they are familiar and don't require any modification to our diet to allow us to include home grown veg. If you don't already grow your own veg you will need to do some research to find out which types and varieties you like but which also grow well in your area and under the growing conditions you can provide. For example shaded areas can grow leaf crops and that sunny nook near the front of the garage could be ideal for tomatoes. Hopefully there will be some overlap between the veg you want to grow and microclimates identified in the assessment.

Most people would not recognise carrots growing in the front yard

Another decision to be made is whether or not the food you will be growing in your front yard is to be shared or retained for your exclusive use. This is an important decision and will have enormous impact on how you will grow annual veg in the front yard so it is important to be sure of this decision first, before continuing to plan the other aspects of annual veg growing.

With the disconnect between food growing and most suburban dwellers it is likely that only the most obvious vegetable would be recognised as food. Not many people will connect those leafy green fronds growing lushly in that raised bed in your front yard as being connected to the wonderfully tasty orange root we know as carrots. On the other hand, most people would recognise tomatoes growing on the bush (or 'vine' as people call it). Nevertheless, I have read where a permaculturist was sick of having his ripe tomatoes pilfered by kids at the school across the road, and so started growing a variety that stayed green even as they ripened!

Perennial Vegetables - These have their own set of advantages such as being able to plant them once and then harvest them over a number of years, they tend to require less care like watering and pest control and are hardier. Also if passers-by have difficulty identifying the annual veg you are growing, perennial veg are stealth veg by comparison!

Sweet potato - Edible leaves and tubers

Of course they may be as equally unfamiliar to the novice front yard grower and so may require some effort to include them in your regular vegetable rotation. While most people would know vegetables like asparagus, sweet potato and choko others like chicory, Okinawa spinach and oca may be less familiar.

Again, the advantage of thinking about perennial veg at the planning stage, is that you can go out and get hold of some to try on yourself and the family first, thus saving time and effort in growing something that in the end, won't get eaten. So buy them, and if the family survives and approves, learn how to cook them in tasty dishes so that your options for home growing food are widened.

Rhubarb

Multipurpose flowers – Flowers are pretty and an expected part of a front yard garden, they also have a place in any de-lawning project, but with a bit of research the flower garden can also be a hive of productivity. As well as being attractive to us, they can

attract beneficial insects (insectary), be edible, be medicinal, consumable as a tea, repel pests, accumulate nutrients so can be used as a fertiliser later, or any or all of these things combined. Again, the advantage of conducting some research at this point to work out what multipurpose and beautiful flowers do well in your area will pay off later as your design is implemented.

Alyssum - a multipurpose flower

Another consideration, particularly where the insectary properties of the flowers are concerned, is what time of the year they will flower, and for how long. For example, the insectary plant Alyssum (lobularia maritimum) which also has edible flowers, flowers for almost the full year, whereas another insectary flower Phacelia (Phacelia tanacetifolia) only flowers from November to January, when there are lots of other flowers available.

Edible 'weeds' - This may cause some consternation for your neighbours, or may be a learning exercise for them. There are quite a number of what we call weeds out there that are not only edible but may also be medicinal, insectary and/or nitrogen fixers and dynamic nutrient accumulators. These weeds are also pioneer species that move in to disturbed ground and hold the soil together, preventing erosion.

Mallow

Such plants include dandelion, flatweed (catsear), chickweed, fathen, sow thistle, mallow, wild (prickly) lettuce, wild carrot and plantain (not the banana kind of plantain).

Flatweed

It can be worth making a place for them in your plan, and you may need to do little else than set aside area of disturbed land for them to colonise and let them have at it! Mind you there is no reason you can't help things along by looking for them in your local area, harvesting some of the seeds and then introducing them into your prepared area. They will pretty much look after themselves and guarantee a harvest.

5.4.3 Writing Your Plant Lists

The output of your research at this stage is to develop a series of plant lists, to help you work out and remember which ones you wish to include in your de-lawned front yard. You can put as much information in the list as you want such as the name of the plant, type (annual, perennial, tree, bush, groundcover, climber etc.) time of the year it is productive or harvestable, how big it grows, when it flowers (if that is important) or even which parts are harvestable. Put in whatever you deem important.

When making decisions about plants for your list(s) there are a few other things to consider when deciding a plant is right for you -

- Will they do well in your climate area?
- Will the harvest be usable by you/your family?

• Is there any weed potential? (Prolific self-seeders which do well in your area or are plants that grow so vigorously they will outcompete everything else, may have weed potential if not carefully managed).
• How hardy are they? What level of care will they require to be productive?

5.4.4 Growing plants together

There are endless techniques and patterns which you can use to integrate the variety of plants you want to grow into a de-lawned front yard. Following are some suggestions which you can look at, think about and decide if they will work in your particular situation. If you are not sure you can give it a go, but by reviewing and integrating these ideas at the planning stage you can get some idea of how they will fit into the big picture and work with (or against!) the rest of the design.

Fruit tree circle – obviously enough this is a circle of fruit trees (or maybe just 'productive' trees) around a central structure which might be a worm tower, large olla (unglazed terracotta irrigation pot), or bee hotel. Our 'fruit tree' circle has a macadamia nut, two apples, two limes (Tahitian and Makrut), a dwarf lemon and a curry leaf tree. There is a worm tower in the centre, topped off by an insect waterer and the whole thing is just 3 metres in diameter.

Fruit tree circle

Central worm tower

Banana circle – in a similar idea to the above, you dig a hole in the ground and mound up a circle around the edge with the soil from the hole. Then fill the centre hole with organic materials which will break down and fertilise the bananas, mulch the mound and then plant a number of bananas equally spaced around the mound. We plumbed the waste from our shower/spa into the centre as well so that lots of water is provided, because bananas are a thirsty crop.

Rain garden – The idea behind a rain garden is that it makes use of rainfall runoff to provide irrigation. That may be runoff from the rest of the front yard, neighbours front yards, water from the house roof or a combination of these. It is sited in a low depression in your soil so that water will move towards it and is set up to have well drained soil so that it doesn't stay soggy. The raingarden can be planted out with native productive or biodiversity supporting species.

Herb spiral – A herb spiral is designed to provide a variety of microclimates in a small area so that a variety of herbs can be grown without taking up a lot of space. A spiral is built up with rocks, bricks or whatever is available, then backfilled with soil. We used roof tiles but due to their size and shape we wound up with a herb 'wedding cake'! Towards the north and top of the spiral is warmer and drier (suiting for example rosemary, lavender, thyme), cooler and damper lower down and towards the south (suiting mint, leafy greens, cress).

Mandala/keyhole bed – Keyhole beds are raised beds that are round in shape with a circle in the centre and an access way to it giving the bed the look of a keyhole when seen from above. The idea is that the whole bed is accessible from the inside and outside without having to tread on soil, compacting it and comprising the growing area.

They work well for growing annual vegetables, flowers etc that need care but dwarf fruit trees would also suit. Where a series of keyhole beds are grown in a circle they are referred to as a mandala bed. A mandala can take up quite a bit of space and may need a large front yard but they can be very productive and visually striking.

Simple mandala bed

Raised beds – There are any number of ways of constructing raised beds; they may have sides or not, they may be built from scratch lasagne bed style or made by double digging the existing soil once the grass has been removed. They may be constructed to any length but should only be wide enough such that the entire bed is accessible from both or either sides without needing to step on the bed and compact the soil. The advantages are built in drainage and a light fluffy soil which is great for soil biota and plant roots. HugelKulture style raised beds use varying size diameter of logs which act as a store of water and fertility as they break down.

5.5 Structures

Depending on the amount of land available, where you are located and your interests, you can also include various, for want of a better term, structures in your plan, to achieve various things, such as improving biodiversity, providing for your local community and/or increasing the amenity of your front yard. For example –

5.5.1 Biodiversity

One of the issues with the suburbanisation and urbanisation of our cities has been the destruction of the wildlife habitat which was once there for birds, insects and mammals to provide housing, shopping centres and buildings for humans. It is possible to encourage some of that wildlife to return by providing somewhere for it to come back to. In some respects just providing an increased level and variety of trees and bushes will support this aim, particularly if they are natives. Where we live in St Clair, western Sydney, was clear felled when it was first opened up, and it took many years of private and public tree plantings before we started to see birds in any meaningful numbers return to the area.

Biodiversity is important - even if it's dinosaurs!

Nest boxes – Here in Sydney we have six species of microbats which are under threat due to habitat destruction. We have two commercially bought bat box kits assembled by us and affixed to a tree in the front yard. There are many other nesting boxes which can be bought in kit form or built from scratch that will also allow you to improve biodiversity in your area including boxes for possums, parrots, owls, feathertail gliders, sugar gliders, lorikeets, kookaburras and other king fishers. What you will need to put up will depend on the needs of your area but a discussion with your local university may assist. Again, a bit of research early on will make this easier.

Waterers – watering stations for birds and insects will also attract wildlife to your front garden, especially in the hot dry times that can occur so often during an Australian summer. We have built several based around an upturned bottle to increase the amount of time between refills. Insect waterers are a bit more tricky because the will require a water filled area to also be filled with rocks or gravel to allow small insects like bees access to the water without exposing them to a danger of drowning.

Water features – while these can also go in the 'amenity' section, if properly constructed they can improve biodiversity by providing habitat for native fishes and frogs. The concept of 'frog hotel' has started to appear on line and is worth pursuing if you are interested. Water features can also allow growing of edible water-growing plant species such as water chestnut, arrow leaf or kang kong (water spinach) as well as cooling and humidifying the area. One word of warning – water features in the front yard, especially ponds, can provide a drowning hazard for young children and this should be taken into account during design. There may be requirements set by your local council for front yard water features such as a maximum depth and/or mesh cover and perusing their website or giving them a call is strongly recommended before implementing anything.

Insect hotels – Have a think about it, if you want someone to come and spend some time with you, what you need to provide for them is food, water……. and a place to stay! It is the same with beneficial insects, once an insect waterer and insectary plants are in place an insect hotel (or 'bug hotel' or 'bee hotel') provides a wide variety of habitats for insects to live and reproduce. You can even buy them in the shops, but my recommendation would be to do some of your own research and build your own. Some of the commercial bug hotels appear to me to be made by people who want to make money off bug hotels rather than people who know what they are doing.

Native bee hive – Again, this will depend on where you are, but in the warmer parts of the country a native beehive can improve biodiversity and pollination of your front yard as well as your neighbours. They do not have all the hassles and restrictions associated with European bee hives and so are easier to arrange and maintain in your front yard.

5.5.2 Community

Including structures that facilitate interfacing with neighbours and passers-by can improve the feeling of community in your area. When you are implementing your plan for the front yard and growing some food there, lots of conversations and sharing can be started by that alone. Installing one or more of these community structures can also facilitate sharing and conversations, a worthwhile goal in and of itself.

Street Library – This essentially, is a structure on the boundary between your front yard and the street, containing unused and unwanted books that can be picked up or donated by anyone walking past. We have found over that last couple of years that we don't always see the people patronising our street library and contrary to my expectations all the books did not disappear in the dead of night but slowly got turned over. Often I would check the library and find a new load of donated books. How you make and set it up will depend on your skills and interests, I have curated ours so that the top shelf has fiction books and the bottom shelf has non-fiction, with a mix of kids and adult books in both areas.

Street pantry – this is like a street library but with food! Ours is mainly to share excess produce but depending on where you are and who your clientele are you could keep any food related materials for use by passers-by. Obviously, if you are sharing dry goods your street pantry will need to be more weatherproof than ours as the fruit and veg do not suffer from the odd drenching if it occurs.

Community Bench – All manner of people can go walking around the area and it can be handy to have a place for those who are unwell or more mature to sit and recover from their exertions. One day I found a woman and her kids making use of the bench while reading to the kids from books out of the street library. It was really nice!

5.5.3 Amenity

While we are talking about productivity, it is worth building in areas where you can enjoy the sheer pleasure of just sitting in your beautiful and productive front yard to enjoy it. That is, improving your amenity.

While this would normally be done in the back yard, doing it in the front yard provides greater potential to engage with neighbours and passers-by. By thinking about this at the planning stage it will be easier to include and area or areas for this in association with other garden features.

Seats – in a similar way to providing a community bench for the use of others, a bench, seat or outdoor swing chair for ourselves can provide a great place to read, think, or enjoy the productive front yard in and of itself.

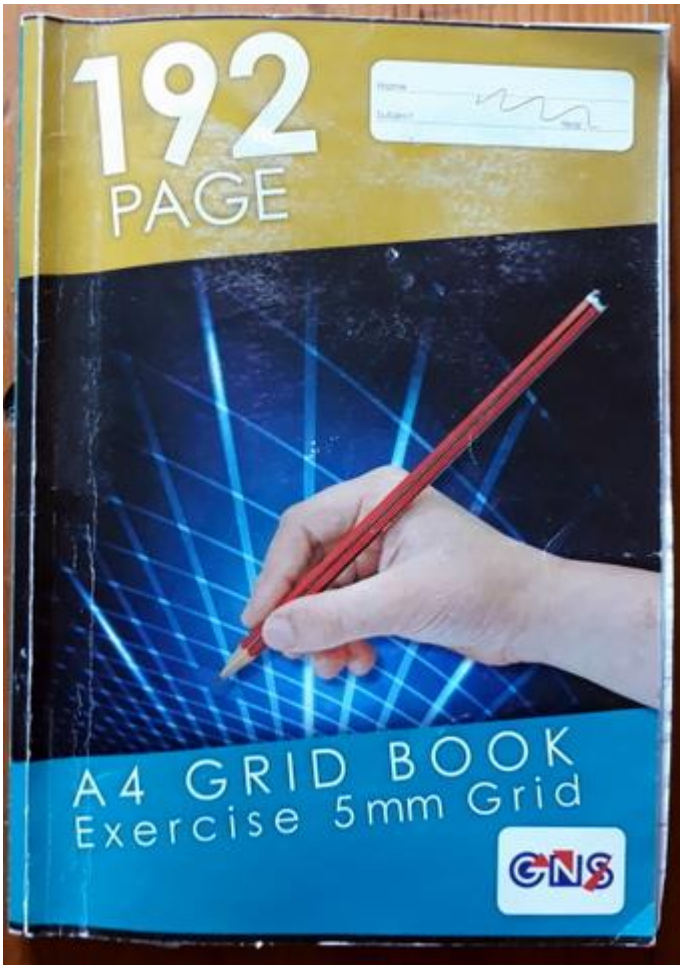
Table – We have a table with attached seat under the mulberry tree, which gives us a cool shady place in summer but allows the sun in during winter and it is a great place for an outdoor lunch with friends or just ourselves.

Swings – attached to a tree if they are big enough or to posts and supports if they are not is a great play space for kids or grandkids, and small cubby would not go astray either. Amenity is not just for the adults!

6.0 Putting it all together

At this point in the plan, while there is research left to do, you should have some idea of what you want to achieve in the de-lawning of your front yard and thoughts and how you will achieve it. So the next step in the plan can be to use pencil and paper to work out what goes where, in other words, you will be developing a mud map of how the project will come together.

Speaking for myself, I am a crap artist who has a bad relationship with even straight lines, but I still want to be able to put a plan together on paper. I am also old, so I don't get the myriad of aps out there that will probably allow you to put a passible map together. I am analogue not digital so I use an A4 grid exercise book with 5mm grids.



It is really handy and more meaningful if the map can be drawn to scale and this is made much easier if you are using grid paper. Just work out what size the area you want to make the map of is and then work out what scale the grid needs to be, for example 5 x 5mm grids being equal to one metre on the ground. Drawing this on the map itself will help keep things in perspective.

The first thing to do once you have worked out the scale is to look at the sketch map you put together as part of the assessment and transfer across any of the items that had been identified at that stage as keepers. Stuff you couldn't, or don't want to move is likely to have an impact on the remaining space so transfer them across, but this time to scale, which may require you to do some more measuring.

At this point you can put in any proposed water points including rainwater tanks and earthworks which will impact on drawing of the plan. Then it is a case of adding in the plants, how they will go together and structures (for amenity, biodiversity and community) which you have decided upon.

It is important to do all of this work in pencil, because it is likely that there will be a number of revisions and your ideas may change with time and research. Also, it may be that something which looked eminently feasible and practical on the plan doesn't work

in real life, or is too much work or whatever. By drawing the plan in pencil this will allow additions and modification to be recorded during the project so that the finished plan will reflect what your new front yard actually looks like.

7.0 Resources

7.1 The Process

The Edible Front Yard – Ivette Soler – Timber Press (US) 2011 ISBN 978 1 60469 199 3 – Even though this book reflects the US experience, if you can only afford on book for your de-lawning this should probably be it. The first chapter features some good introductory comments o front yard growing, Chapter 2 & 3 give a rundown on 72 productive and beautiful plants (fruit, veg, herbs & flowers) suitable for a front yard including how to grow and now to use each one. Chapter 4 gives and intro to garden design from an attractiveness perspective, and chapter 5 illustrates various whole-yard designs. Chapter 6 discusses assessing your front yard prior to starting, chapter 7 covers removing and reusing plants and materials during the front yard project. Chapter 8 looks at the infrastructure including irrigation, landscaping features and privacy; Chapter 9 covers maintaining the garden organically and chapter 10 covers harvesting and keeping the garden going. Lots of colour photos and side boxes with descriptions of specific projects.

Edible Estates: Attack on the Front Lawn – Fritz Haeg – Bellerophon Publications (US) 2008 ISBN 978 1 93305 74 0 – This is a project by Fritz Haeg with contributions from Diana Balmori, Rosalind Creasy, Fritz Haeg, Michael Pollan and Lesley stern. This is not a 'how to' book but more about why it is a good idea and what people have done. The first part of the book is about the Edible Estates project and why it is important, followed by an article by Michael Pollan on how he came to the conclusion that lawns were not a good idea, followed by an article on the democracy of the lawn in America and the last article is from Rosalind Creasy on how she set up he productive front yard garden. The second part of the book gives designs, pictures and descriptions for what they call Regional Prototype gardens from the US (3) and London (1). The third part provides descriptions and monochrome pictures of front yard gardens in various US climatic ones. There are also regional planting calendars for US climate zones 10 through to 3 and other resources. Lots of colour and monochrome pics and some diagrams.

How to Create an Eco Garden – John Walker – Anness Publishing Ltd (UK) 2012 ISBN 978 1 903141 89 2 – There is a lot of information in this book, each two page spread contains information on a single subject and lots of colour photos so there is not a huge amount of data on each subject. The book covers yards, courtyards and allotments but most of the info is front yard applicable. The first chapter is eco garden 'greenprints' and gives layouts for various size gardens, Chapter 2 talks about basics like tools, sowing seeds, feeding plants, companion planting and establishing an ecosystem. Chapter 3 covers soil care and composting, mulching and cultivation of the soil, Chapter 4 covers greenhouses, cover crops, water harvesting and storage and irrigation techniques. Chapter 5 covers some of the issues specific to food gardening, including planning, planting and fruit in containers, Chapter 6 covers the how and why of improving garden biodiversity, chapter 7 is about sustainable landscaping and chapter 8 is directory of eco-plants, reflecting the UK experience. Lots of colour photos.

Food Not Lawns – H.C. Flores – Chelsea Green (US) 2006 ISBN 978 1 933392 07 3 – This book is really about activism by using your grassed areas (including the front lawn) to grow food. Some of the techniques in the book are very innovative and urban/suburban friendly. The first chapter is about how the idea came about and the why's and wherefores of converting your lawn to food. The second chapter talks about getting started by planning, making the most of your space and identifying resources and using them in the city and suburbs. Chapter three talks about the water cycle, its importance, making the most of water in the city by reducing your usage and harvesting it where you can. Chapter 4 talks about the soil, maintaining it, composting and improving your soil, chapter 5 talks about plants and guilds, plant functions, layering in time and space, edible weeds and chapter 6 covers seed stewardship. Chapter 7 discusses the process and tools for designing your de-lawned space including permaculture principles. Chapter 8 covers taking things beyond the garden including reducing energy use and buying less, chapter 9 talks about involving the community by getting involved in projects, teaching others and activism, chapter 10 talks about reaching out and connecting with likeminded people, chapter 11 covers working together and chapter 12 talks about working with kids. Lots of line drawings and diagrams.

Gardening Your Front Yard – Tara Nolan – Quatro Publishing Group (US) 2020 ISBN 978 0 7603 6486 4 – While some of this book focusses on aesthetics, there is some good info and ideas on increasing front yard productivity and reducing lawns. Chapter 1 sets the scene and talks about front yard inspiration, processes for removing grass, addressing security concerns and dealing with a slope. Chapter 2 covers ideas for turning the front yards into a social space. Chapter 3 discusses ideas for improving the aesthetics as well as some productivity improvement like adding pollinators, chapter 4 goes into detail around front yard veggies. Chapter 5 covers water storage, diversion and use in the front yard as well as wildlife and pollinators. Chapter 6 covers improving front yard aesthetics again with various projects. It is a bit of a coffee table book without huge amounts of detail, but some good project plans and lots of colour photos.

7.2 Edible Landscaping

The Complete Book of Edible Landscaping – Rosalind Creasy – Sierra Club Books (US) 1982 ISBN 978 0 87156 278 2 – I guess this is called the Complete book of edible landscaping, because it is! The book is written in three parts – Part one is entitled Foodscaping and how to do it, and it is basically the principles and practice of edible landscaping. It first talks about growing food without chemicals and why you might want to grow your own. It then moves into energy conservation, water conservation and soil conservation, landscaping history, groundwork such as planning, soil testing and elements of the landscape. Designing your landscape with edibles and small area landscaping and then covered, followed by planting and maintenance. Part two is an encyclopaedia of edible plants (92 of them!) listing for each one things like how to use them in the kitchen and landscape, how to grow them, how to buy them, preserve them and a recipe or two. Part three is a compendium of resources and references but I would suspect that, because the book is USA-centric and published 40 years ago, most of them would no longer be applicable. The book has lots of line drawings, colour drawings and colour photos. A must for the library.

Designing and Maintaining Your Edible Landscape Naturally – Robert Kourick – Permanent Publications (UK) 2004 (originally published by Metamorphic Press, US, 1986) ISBN 978 1 85623 026 0 – Another oldie but a goodie! The book is written in eight parts. Part one provides an introduction, talks about organic gardening myths and facts and understanding your property: climate, soil and existing vegetation. Part two covers the design and talks about planning before you plant, an energy conserving landscape, then putting it all together. Part three covers growing vegetables and part four covers growing tree crops. Part five covers biological balance with insects including companion planting and integrated pest management. Part six covers soil and soil improvement, part seven covers mixing trees, lawns, flowers, herbs, vines and vegetables and part eight gives a review of 13 edible plants including their growth requirements and a recipe or two for each one. The book has a central section with lots of colour photos and plenty of line drawings and tables throughout the book.

Edible Landscaping with a Permaculture Twist – Michael Judd – Self-published, distributed by Chelsea Green (US) 2013 ISBN 978 0 615 87379 4 – This one is nowhere as comprehensive as the two previous works, but rather takes various ideas and shows how they are constructed and can be integrated into an edible landscape. The first chapter talks about how to construct and then plant out a herb spiral including what parts of the herb spiral suit which herbs. Chapter two talks about rainwater harvesting, in particular using swales and raingardens, chapter three talks about growing specialty fungi outdoors, chapter four goes through food forests and guilds. Chapter five talks about growing uncommon fruits such as persimmons, paw paw and kiwifruit, gooseberries and currants, as well as shaping and pruning and grafting. Chapter six covers designing and building hugelkultur beds and chapter seven talks about designing and building your own earthen oven. The book has lots of colour photos and coloured illustrations.

Landscaping with Fruit – Lee Reich – Storey Publishing (US) 2009 ISBN 978 1 60342 091 4 – The book commences with an introduction to the joy of home grown fruit with the second chapter covering landscape design basics such as plants as design elements, site analysis and putting it all together. Chapter three covers considerations in planting such as climate assessment, soil and sun and conducting a personal assessment to work out what you want. Chapter four covers growing the plants including selection, pollination, planting, pests, pruning and soil care. Chapter five provides five sample home landscape plans including a patio fruitscape, modular backyard and a children's garden, each entry providing an introduction, list of edibles and ornamentals in place and sketches from various angles. Chapter six is a guide to fruiting landscape plants providing monographs on over forty fruits with each monograph providing statistics, general introduction, seasons of visual interest, plant size and growth habit, growing tips, varieties (in US), regions of best adaption (in US) harvest storage and use, plus a colour photo or two. The book has lots of colour photos and some colour sketches.

All-in-one Garden – Graham Rice – Cassell Illustrated (UK) 2006 ISBN 978 1 84403 451 8 – while this book does not sell itself as an edible landscaping book, it really is one, written around the premise that you can grow productive plants and attractive plants in the same bed (who knew?). After an introduction, chapter 0ne – food and flowers –

talks about the benefits of fresh food, growing food in small spaces, planning and growing attractive as well as productive crops. Chapter two – sites and situations – talks about planting out small spaces, larger spaces, shady areas, sunny and dry areas, raised beds and containers with lots of plant lists to suit each area. Chapter 3 – Seasonal food and flowers – covers planting and growing the all-in-one garden through the seasons and chapter 4 provides a plant list covering fruit and berries, vegetables, family by family, starting out with cut-and-come-again veggies, fifteen herbs, and nine edible flowers. There is a paragraph or more on each plant. Chapter 5 – planting and maintenance – covers just that, talking about soil, compost and mulch, watering, seed sowing, planting, maintenance, succession planting and spraying (or not spraying!) most subjects being given a page or so. There are lots of colour photos and some line drawings in colour of some examples of set out in various all-in-one gardens.

Edible Garden Design – Jamie Durie – Penguin Group (AUS) 2003 ISBN 978 1 921383 08 03 – This is an interesting book and quite good given two caveats – there are a lot of beautiful colour photos but not huge amounts of information for the size of the book, and about 50% of the designs he reviews are from overseas. The book has Seven chapters – Delicious Design; Edibles Anywhere; Vertical Gardens; The Kitchen Garden Reinvented; Community Connection; Permaculture and An Edible Future. Each chapter provides information about the subject (first chapter provides good information on the elements of design) and then reviews a garden or gardens to illustrate how they model the information in the chapter. Generally the review starts with a Q&A with the owner, a section on what he likes about the design and then a section on how the reader can replicate design elements. This book does have lots of good ideas, and a huge number of colour photos.

7.3 Plants

Permaculture Plants: A Selection – Jeff Nugent & Julia Boniface – Permanent Publications (UK) 2004 ISBN 978 1 85623 029 5 – Even though published in the UK there are an awful lot of Aus species! The book starts out with a two page overview of permaculture and one page on propagating plants, followed by the meat of the book, a series of plant lists. The lists are broken up into seven chapters. Chapter one is pioneer species (12 entries) such as wattles, casuarinas, leucaenia and alders. Chapter two covers nuts (11 entries) covering such nuts as walnuts, macadamias, almonds, bunya bunya and jojoba. Chapter three covers fruits (27 entries) including fig, loquat, pepino, sapodilla and cherimoyas. Chapter four talks about utility plants (21 entries) such as willows, neem, eucalypts and bamboos. Chapter five provides lists of other utility plants such as bee forage, companion plants, groundcovers with low fire potential, medicinal herbs for livestock and trees and shrubs with low fire potential. Chapter six covers water plants including water plants that are submerged, floating, emergent and of margins and water meadows. Chapter six covers plant lists for difficult sites including salt tolerant and tolerant of alkaline soils. Entries can vary in size from a couple of lines to a full page but are mostly a paragraph or two. Many entries are accompanied by a line drawing and there is a colour photograph section in the centre of the book.

Perennial Vegetables – Eric Toensmeier – Chelsea Green Publishing Company (US) 2007 ISBN 978 1 931498 40 7 – This is THE book on perennial vegetables and as such deserves a place in your library, but bearing in mind it does reflect the US experience so not all plants mentioned will be available in Aus. The book is broken up into 3 parts. Part one covers gardening with perennial vegetables including benefits of perennial veg, design ideas, selecting species and techniques for growing. Part two, the main part of the book, is a series of monographs, called species profiles, on over 90 perennial vegetable in alphabetical order by species. Each monograph starts with a map of USA & Canada showing plant distribution and touches on – general overview and history, description, climate, tolerances and preferences, naturalisation status (in North America), pest disease and weed problems, propagation and planting, harvest and storage, uses and related species. Part Three is called 'Resources' and provides lists of: perennial veg for each climate type (tailored to North America but still useful), recommended reading, helpful organisations and websites and sources for plants, seeds, gardening supplies and materials (again, North American only). The book has lots and lots of colour photos.

Growing Uncommon Fruits and Vegetables in Australia – Keith Smith – New Holland Publishers (AUS) 1998 ISBN 1 8646 35 1 – This book is comprised of six sections: Africa; Americas; Asia; Australia Europe and Western Asia. Plants covered are broken up into section such as grains, greens, brassicas, legumes, roots and fruit. The book covers 150 varieties of fruits and vegetables in all. The first part of each plant entry covers the family and species name, whether it is an annual or perennial, preferred climate type and common names of the plant. There is an introduction about the plant itself including some history and then a paragraph or two on how the plant should be grown. Most entries have a line drawing of the plant.

Incredible Edibles – Matthew Biggs – Dorland Kindersley Ltd (UK) 2018 ISBN 978 0 1437 6983 5 – This is an interesting book, but be aware that it reflects the UK experience. The book starts out with an intro, tips and tricks for growing like growing from seed, planting out and general care. This is followed by tips on choosing your crops such as pots, fast growers, shade loving, boggy growers, small gardens and drought tolerance. The rest of the book is broken up into a series of monographs – Fruiting vegetables (5) eg snake gourd, chickpeas; Salad vegetables (7) eg cucamelons, shiso; Leafy greens (8) eg sushi hosta, purslane; Roots, bulbs and shoots (12) eg yacon, mashua; Grains and seeds (5) eg quinoa, chia; Herbs and spices (10) eg tea, mountain pepper; and Fruit (11) eg flax-lily, fuchsia berry. Each monograph provides data in a quick guide, like temperature range, soil requirement, and water requirements followed by a description of the plant discussion of how it is grown and detailed steps on how to grow the plant including sowing directions, repotting, planting out, aftercare, harvest and winter care. This is followed by a colour photo and tips on how to keep the produce fresh, how ot eat it and how to preserve it. Lots of colour photos.

The Edible Flower Garden – Rosalind Creasy – Periplus Editions (US) 1999 ISBN 978 0 962 593 293 3 – The book is broken up into four parts. Part one is an introduction, talking about how to grow edible flowers in general and two specific edible flower gardens which the author has been involved in. Part two is the 'encyclopaedia of flowers' and covers how to

grow and how to prepare 45 edible flowers. Part three is a compilation of 23 edible flower recipes. There is an appendix on planting and maintaining edible flowers and another one on pest and disease control. The book has lots of full colour photos.

Backyard Bush Tucker – Peter Bindon – Anthony J. MacQuillan (AUS) 2014 ISBN 978 0 9804215 8 3 – The book starts with an introduction covering waterwise gardening and details about the authors own bush tucker garden in NSW. Section one of the book proper provides some suggested plant combinations based around nine Australian climate zones including tropical zone, summer rainfall eastern area; arid; temperate zone, dry summers; wetlands. Each suggested combination gives a diagram as a suggested layout and species for an upper storey, middle height, low plants and ground covers, vines and climbers. Section two is a species list of 97 general bush tucker plants, each entry being composed of a paragraph detailing the edible parts, a general description of the plant and how it is propagated. There are pages at the back of the section with colour photos of many of the plants covered. Section three provides data on four special plant groups: gum trees; wattles; figs and lilly pillys with species lists stating species, common name, height and use. Section four is a series of plant lists of other useful species and section five details resources like publications and plant sources. There are some line drawings and lots of colour photos.

Eat Weeds – Diego Bonetto – Thames & Hudson (AUS) 2022 ISBN 978 1 760 76149 3 – The book has a foreword by Costa! Then moves through the story of Diego's foraging journey and a short introduction about the resurging of foraging and it's importance. The main part of the book is broken up into five parts, each part being an environment where weeds are found and covering the weeds found there. Also each part has a section at the front of the chapter that discusses legalities and ethics of gathering edible weeds in that area, Part one covers the backyard, and has monographs detailing 10 weeds; Part two covers urban streets and parklands and has monographs detailing 8 weed trees and weeds. Part three covers the sea and has monographs detailing 9 weeds. Part four covers the rivers and has monographs detailing 10 weeds. Part five covers the forest and has monographs detailing 7 mushrooms. Each monograph provides a general introduction to and history of the weed, how it may be identified broken down into leaves and stalks, flowers and seeds and roots, how it may be used as food, how it may be used as medicine and occasionally a food or medicine recipe. The book is overflowing with colour photos and some line drawings where appropriate.

7.4 Biodiversity

Habitat – A.B. Bishop – Murdoch Books Australia (AUS) 2018 ISBN 978 1 76052 347 3 – The book has ten chapters in two parts, each chapter has a case study at the end illustrating how the chapter can be used in practice. Part one (Biodiversity for Life) has three chapters, chapter one details what a habitat garden is and why it is beneficial; Chapter two covers ecology and food chains/webs; chapter three discusses how food webs work in the backyard. Part Two (Backyard Habitat) starts with chapter four which talks about plants for your backyard habitat, including classes of plants such as those for food, shelter and socialising and plants for pollinators. At the end of chapter four is an extensive plant directory with photos giving data on what layer and (Aust) zone they are for, flower colour, what they contribute and how high they grow. Chapter five covers earthworms and insects

and how to put in habitat to support them; chapter six does a similar thing for frogs and reptiles; with a section at the end covering pests and other undesirable visitors. Chapter seven talks about habitat to support bird life; chapter eight does a similar thing for animals such as bats, possums and gliders; Chapter nine covers hints and principles for designing habitat garden and chapter ten gives details for projects to improve the biodiversity in your area such as constructing bee/bug hotels, bat and other animal boxes and a frog pond. This is a wonderful book, with lots of colour photos!

Habitat Garden – Peter Grant – ABC Books (AUS) 2008 ISBN 978 0 7333 1279 3 – This is a great book, lots of info! Chapter one covers the what and why habitat gardening chapter two talks about planning the habitat gardening, why do it, the planning process and includes some garden scenarios. Chapter three talks about propagating plants for the habitat garden; chapter four covers the activities associated with maintaining it including watering, mulching, pruning and managing weeds and pests. Chapter five covers attracting birds, insects and animals to the habitat garden, chapter six covers putting in a habitat garden in difficult areas such as coastal, rainforest and arid gardens. Chapter seven provides details on groups, nurseries and environmental care groups from plants and information can be available. Lots of colour photos.

The Australian Bird Garden – Graham Pizzey – Angus & Robertson (AUS) 2000 ISBN 978 0 207 19675 3 – The book is written in four parts. Part one covers experiences from the author's garden and travels. Part two covers the practicalities of setting up a bird-garden including what native birds need, soil, water and feeding birds, when birds fight their own reflections and nesting boxes. Part three discusses a few bird species and their behaviour, then more general information about birds as pollinators. Part four talks about plants and how they grow and interface with insects and birds. There is an appendix of plant lists by capital city with some smaller cities included. The book has lots of colour photos.

Nest Boxes for Wildlife – Alan and Stacey Franks – Blooming Books (AUS) 2006 ISBN 978 1 87647 20 7 – This small book starts by explaining why providing wildlife nest boxes is important in chapter one. Chapter two talks about the animals covered in the book and some of their habits. The main part of the book provides detailed plans, material and tool lists and instructions on how to build and mount animal nest boxes. The plans cover boxes for 17 bird species and 11 mammals. Chapter five covers providing food and water as an attractant to use the nesting boxes. The book features line drawings and lots of colour photos.

Attracting Frogs to Your Garden – Kevin Casey – Kimberley Publications (AUS) 1996 ISBN 978 0 9587628 0 5 – Again, this is a small book. But with lots of info. Chapter one talks about why there has been a decline in frog numbers and provides some hints for attracting frogs to your garden. Chapter two gives a general review of our unique amphibians, chapter three suggests some resources to assist with frog identification and details simple steps to be taken that improve frog identification. Chapter four talks about how to look for frogs and chapter five talks about frogs as pest controllers. Chapter six covers cane toad identification and eradication. Chapter seven talks about frog calls and mating while chapter eight talks about doing the right things to keep frogs happy and healthy and chapter nine talks about

raising tadpoles. Chapter ten details hot to set up a backyard frog pond and chapter eleven goes through ‘frogsaping’ your backyard with the appropriate frog-friendly plants. Chapter twelve covers attracting other animals (native birds, mammals, insects etc) and chapter thirteen covers frog photography. The book has line drawings, lots of B&W photos and a couple of colour photos on the covers.

Appendix 1 – Front yard Delawning Assessment form

Vision:

Date:

Grass Species:

Dimensions and Area of yard:
Dimensions and Area under Lawn:

Fencing type and height (if present):

Soil(s):

Aspect:

Drainage and slope:

Water access:

Shade:

Prevailing wind direction:

Microclimate issues:

The Road:

Existing Materials/plants & structures in the yard:

Sketch of shape etc.

Appendix 2 – soil testing

Part 1 – Introduction and Soil Sampling

There is a truism that says you can grow almost any plant in almost any soil; but the more fertile your soil is, the better the structure is and the more abundant the soil life is, the less you have to do to it to grow abundant fruit and vegetables. If your soil is so important to the growing process it seems to me that any information that you can glean about your soil will be worthwhile. By understanding your soil you can use techniques and additives that improve your soil over time rather than depleting it.

There are three aspects of the soil that can be investigated to help understand the soil we will be planting into –

Physical aspects – the type of soil and the constituents that go to make it up, which has an impact on soil structure, drainage etc.

Chemical aspects – how acid or alkaline the soil is and what sort of nutrient levels are present, which can impact how well any plants will grow can also affect the living organisms present in the soil.

Biological Aspects – what types of animal life can be found in your soil, which is also an indication of soil health.

I have used some tests that a "backyarder" such as myself can carry out where you do not need a PhD in soil science or the services of a fully staffed analytical laboratory, which is handy seeing as I have neither. Hopefully you can also use these tests to get a handle on how healthy or otherwise your soil is and use the results to plan on how you can improve your soil in the long term. Also, for those of a Permaculture persuasion, this can be some interesting research to carry out before you develop your Permaculture design.

If you are sampling your soil before putting in a veggie patch or some fruit trees it is a good idea to do your sampling a few months before you plan to start work, that way you get time to make adjustments if you find something out of kilter. It is a good idea to sample and test your growing areas every few years too, so you can keep a handle on how your soil is going. The actual time of year doesn't matter so much but if you have disturbed the area, say by double digging a veggie bed, it would be best to let things settle down for a month or two before sampling.

Sampling your soil

In the same way that a chain is only as strong as its weakest link, your soil testing result is only as good as the samples you have taken. Take enough and combine them well to form homogenous soil mix and your testing regime will be reasonably accurate. Do a crap job of sampling and your results will be skewed, so any decisions taken on the basis of those results will be crap too. It is the classic data cliché – garbage in = garbage

out. So it is worth getting this step right!

The first thing is to look at your yard and where you intend to grow your fruit, veg and herbs, to identify the areas you wish to test. To facilitate this, a map of the area you are going to sample will come in handy, even a hand drawn mud map will help.

What you will need

- A clean spade or trowel (while it doesn't matter for the purposes of this exercise, if you think you might want a full, professional analysis done on your samples at some later stage, do not use brass or galvanised tools to take the samples, it will give a falsely high reading on copper or zinc)
- A bucket (plastic works well here, a galvanised one may cause obvious problems)
- Pen & Paper (for any notes) and a clip board really helps!
- Your mud Map
- Plastic bags – large, resealable and felt tip pen for labelling

Look over the area you wish to sample and then mark out where you are going to take your samples using a zigzag pattern, working from one side of the area to the other with the sample areas about a metre apart. For most backyard veggie growing areas 5 or 6 samples would be plenty. The sample depth should be as follows:

- Usual veggie garden type areas – 100 to 150mm
- Shrub areas like some larger herbs or berry bushes – 150 to 200mm
- Trees such as fruit or nut trees – 100 to 200mm

Taking the samples

Brush away any mulch or vegetation on top of the soil before taking a sub-sample. Using your spade or trowel, dig a vee shaped hole down to the required depth. Place the spade or trowel near the edge of the hole at about 1 centimetre away. Push down steadily so that you cut a 1 cm slice from the ground level all the way down to your sample depth. Pick up the slice and dump it into your bucket. Move to the next sample area and repeat the process until all areas have been sampled.

Using your hand, break up any soil lumps and then scoop the soil around in the bucket to ensure it is well mixed. If there has been rain and the soil is a bit muddy you may need to let the sample dry out a bit, do this by spreading it out on clean paper out of the sun and let it air dry naturally for a few hours. Alternatively, sample after the soil has had time to dry out a bit.

Once you are happy with your sample, place it into the plastic bag. If you have more than one sample don't forget to label each one and then mark on your mud map where the samples were taken.

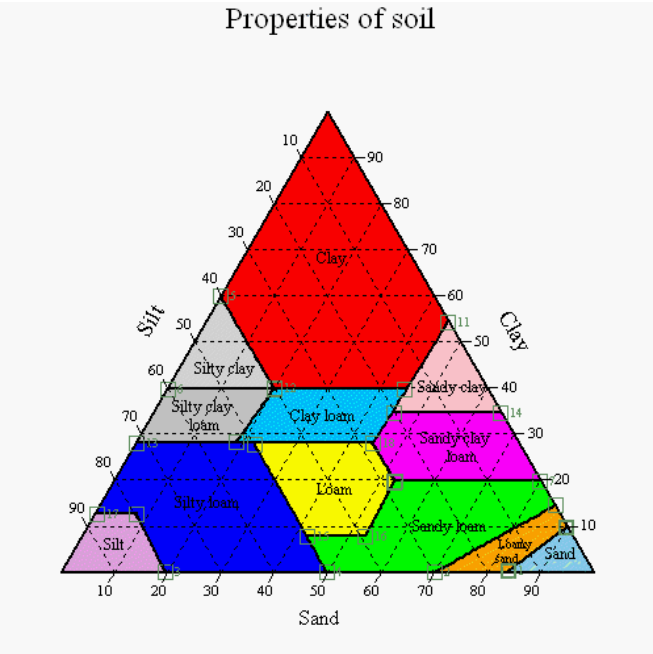
Part 2 Physical Aspects

The physical aspects of a soil consist of how its parts work together to form the soil structure, dictating how well or otherwise a given plant will thrive on that soil. Soil is generally broken down into three physical components; sand; silt and clay but you can also add a fourth – organic matter

Sand – a sandy soils, like those found around Perth (Aus) have very coarse structure with good drainage but a sandy soil lacks clay and loam and so will not hold water and will tend to lack nutrients. Sandy soils are easy to dig into and plant roots can penetrate them easily but dry out quickly after rain. Too much sand can be as bad as not enough.

Clay – on the other hand, clay soils have very fine particle size, they generally can provide the plant with good nutrition but drainage is poor and they tend to waterlog easily. There is nothing like planting into good old Sydney clay! Unfortunately when the clay soil does dry out it can go hard as a rock and be very difficult for plant roots to penetrate and a bugger to have to dig.

Silt (often referred to as "Loam") – silt is weathered rock and in particle size sits between sand and clay. It feels like flour when dry but has a silky feel when wet. It provides some nutrients to plants and allows for some soil water retention.



There is a complicated little **phase diagram** (see left) which, once you know the percentages of each of these three components, will allow you to work out what type of soil you have. It might be clay, clay loam, sandy loam etc. To me the name is fairly meaningless because I am a back yarder not a soil scientist, but the components of my soil will let me know how well I will be able to grow the plants I want but also give me some hints on what I can do to improve my soil.

Organic matter – This is the part of the soil contributed by the plants and animals which live in, under and on top of the soil. It is comprised of humus, particulate matter like mulched up sticks and leaves or partially decomposed animal dung and, especially where bushfires are a feature of the landscape, charcoal. Strangely enough soil organic matter not only improves drainage but also improves soil moisture retention, as well as providing nutrients for plants and other soil life.

Conducting the Test

Bottles to the ready!

It would seem a good thing to have a rough idea about the sort of soil you are blessed (cursed?) with and what you can do about improving it, so what follows is a simple test anyone can carry out once you have correctly sampled your soil.

1. Get hold of some glass jars, somewhere between 500ml and 1 litres (I use recycled 500ml jars because it is what I have). You will need to have one jar per soil sample (see soil sampling). If you use recycled jars remove the labels, you will need to be able to look through the side of the jar and it is easiest to compare relative amounts of the soil components if the jar has parallel sides.
2. Label each jar so you know which sample is in it, I just use a simple number to denote which is which but it is a good idea to write down somewhere what each number means. A good place to do that is the soil test results sheet.
3. Add a soil sample of approximately a quarter of the volume of the jar, I use 500ml jars so to put the sample in I used a half-cup sized measuring cup (1/2 cup = 125mls).
4. Add water up to approximately 80% of the volume and then place on the lid (firmly!) and then give the whole apparatus a good shake. A loose lid lets it gush out all over the place and if you happen to be doing it in the kitchen and the lid comes off your popularity score with your significant other could take a considerable dive. (not that that happened to me of course!)
5. Let the samples stand unmolested overnight and they will be ready to read the next morning.

Add the soil, then the water and shake.

This process works by stratification, the heaviest materials sink quickest, while the finer materials can take much longer to settle. So over time a series of layers are laid down and these can be read through the side of the glass jar. The bottom layers will consist of any rocks, followed by coarse sand, fine sand, silt and then progressively finer particles

until the clay layer deposits, although the really fine clay may take days or weeks to come out of suspension.

Another indicator of the type of soil you have to work with is the layer of floating material on top of the water. This layer is formed by the soil organic matter, so the thicker the layer the more organic matter in the soil.

Overnight and ready to read

The relative thickness of each layer will give you an idea of how your soil is made up. A quickly sinking thick layer of coarse material indicates a very sandy soil whereas rough equal amounts of all components indicates a good loamy soil that won't take much effort to grow plants well.

"Feel" Test

There is an even quicker and lower tech soil test which requires no equipment and can be carried out in the field. Dig down with your fingers into the soil and make a ball of soil and squash it between your fingers, smear it about a bit. How does it feel?
If the texture has a "silky" feel to it your soil will have a high clay content but on the other hand if it has a "gritty" feel it will be a predominantly sand containing soil.

Part 3 – Chemical Aspects

When it comes to the chemical aspects of your soil which you can test yourself, it usually boils down to three facets, pH, soil nutrients, particularly the major nutrients nitrogen, phosphorous and potassium (NPK) and salinity. pH is by far the easiest and this is the fact we will be focussing on here.

The pH of the soil refers to how acid or alkaline the soil is, which can have a significant impact on plant nutrient uptake and subsequently plant health. There is a fairly simple qualitative test that you can use with stuff you probably have hanging around your house –

Acidity test – put a dessert spoon of the soil you wish to test into a cup. Add ¼ cup of water then sprinkle over some sodium bicarbonate (baking soda) and mix in. If you get bubbles, ie the sample fizzes, your soil is quite acid.

Alkalinity test – put a dessert spoon of soil into a cup then add a dessert spoon of vinegar and mix. Again, if you get fizzing then your soil is alkaline.

This is a pretty simple test which you can do quickly, cheaply and easily but it does not give you a number so to be really sure of what pH you soil is, it is best to pick up a soil test kit and use that.

There are two main methods of measuring pH, electronically and chemically.

Electronically

This requires buying a small pH meter consisting of a probe which is inserted into the soil to be tested and the dial or meter which shows the pH reading. The two parts may be connected by a flexible wire or rigid tube so that the entire meter is an integral unit. The procedure for use is very simple: push the probe into the soil a few centimetres and then the reading can be taken directly from the meter a minute or two later. The important considerations are that the soil be wet, or at least damp, and enough readings are taken over the entire planting area so that an accurate picture of the whole area can be gained.

The advantage of the meters is that they are reasonably cheap and once you have paid for it there is nothing else to buy, not even batteries. However, the manufacturer's assurances notwithstanding, I am still not convinced they are as accurate as the second method.

Chemical or "Wet" Method

This involves buying a test kit containing a dye which changes colour with pH (called a universal indicator), a contrast medium which is a white powder that makes the colour change stand out and a colour chart to translate the colour change into a pH reading. There are several kits available, with one you mix the soil to be tested with water to

form a paste then sprinkle on the white powder followed by the universal indicator and compare the resulting colour with the colour chart to read off the pH. With another the soil is diluted in water, the solids filtered out and the universal indicator added directly to the solution; the colour of the solution is read against the colour chart to find out the pH.

What you get in the kit

The test kits are more expensive than the meters but they contain enough chemicals to do many tests and in my experience are more accurate. Both the meters and the chemical test kits are available from hardware stores and plant nurseries.

Part 4 – Biological aspects

The soil supports a web of life or food chain commencing with the plants themselves, which start the whole thing off by using sunlight and chlorophyll to create simple sugars, made use of on a microbial level by bacteria, fungi and nematodes (microscopic worms). As you move up the chain, organisms become larger and more complex until you reach the climax predator(s) for the particular bioregion where you live.

But how does all this relate to testing the soil in the veggie patch in your backyard?

Worm Numbers in Soil

The number of worms in a given amount of soil from you veggie patch or whatever may act as an index as to the health of your soil. The test is carried out as follows –

1. Ensure that the soil temperature is at least 10°C and has not recently been cultivated.
2. Using a trowel and spade dig out a 30cm cube of soil and place onto a tarp, garbage bag etc.

3. Gently sift the soil (if possible) through a garden sieve and then count the worms present in your sample.
4. Count up the number of worms discovered.

Ten worms per test confirms that your soil is in good shape whereas 9 or less may point to problems such as lack of soil organic matter (in association with other tests) or the soil is too dry, there are pH problems, there may be pesticide contamination or the soil is too compacted.

In the event of a low worm count the idea to correct the situation is not to supply more worms but to fix the underlying problem – “if you build it they will come”.