Upwardly Mobile with Vertical Veg

www.underthechokotree.com
Sustainable Living in the Suburbs

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0.0 Introduction

Being upwardly mobile by growing selected veggies up instead of out, has a number of things going for it:

1. It maximises use of horizontal space – if you want to grow some food in an urban or suburban space and you are like me, there will never be enough room to grow all you want, so it is important to make the most of the space you have. One way of doing that is by growing vertically.
2. Cultivate less ground, less time weeding – Cultivation can cause weed seeds in the soil to germinate, therefore less time weeding.
3. Create shady areas – Here in western Sydney (as well as lots of other places in Aus) the problem is not lack of light, but rather too much. By growing vertically, plants can create shady spaces for flowers or vegetables that react poorly to hot weather. Also, by growing vegetables like chokoes vertically they can create cool and shady spaces for people and pets.
4. Improve water efficiency – by using efficient watering practices and only water the soil at the bottom of the veggies, you don't need to use as much water.
5. Increase the light and air getting to leaves – This means healthier plants, the leaves will be getting the light that they need for photosynthesis and extra air movement means that fungal diseases (which thrive in warm, moist, still air) will be reduced.
6. Ease of monitoring & controlling pests & diseases – What you can't see you can't fight and growing veggies vertically will make it much easier to see the whole plant. That way you will be able to monitor for pests and diseases and they will be less likely to sneak up on you.
7. Increased yields – Due to points five and six above (more light and air and better control of pests and diseases) you will be able to harvest more healthy produce from each plant.
8. Improved access to produce – it is easy to miss vegetables (for example pumpkins and cucumbers) that are produced in amongst the riot of leaves and vines of the growing plant. Vertical growing makes it easier to see your fresh produce, as well as (dare I say it) make it easier to harvest without having to crawl around on the ground to find them.
9. Cleaner produce – vegetables that sit on the and encourage passing insects to have a chew also tend to get dirty, and dirt contamination can also contribute to disease issues.

Vertical growing is a useful technique to be aware of and to have in your permaculture arsenal of ideas.

1.0 First Steps

This was originally an article written for, and published by, 'Grass Roots' magazine, No117 (Oct/Nov 1996) so it represents where we were going with things almost 30 years ago.

Like many who would be more sustainable, I live in an urban area and a perennial problem is to find enough room to grow all the things that I want to. Some years ago I decided to squeeze more produce out of the yard without creating too much congestion. I did a bit of reading and came up with a few ideas that I thought were worth a go and in the manner of such things, some ideas worked, some didn't. All of them involve gardening vertically rather than horizontally so that the minimum space yielded the maximum produce. Warts and all, here are the results.

THE TANK GARDEN

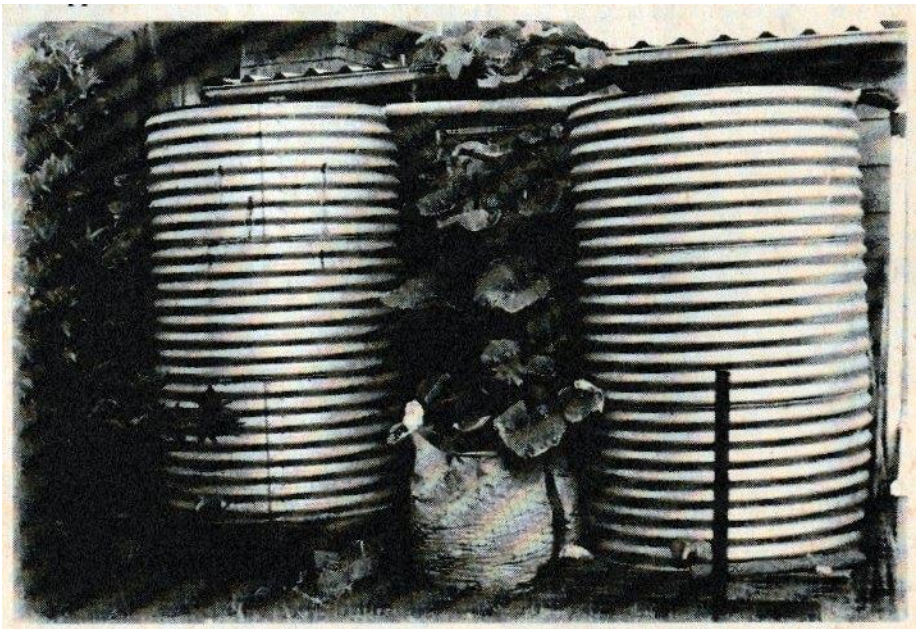
Not so much a garden growing in the tank, but over it! We have two water tanks behind our garage and the northern edge facing the house tended to look a bit scrappy, so for years I have been promising myself that I would put up a planter to cover up the area. Originally my plans were for brick, but as a bricklayer I make a good manager so I cut up and old railway sleeper I had lying around. This fitted the bill remarkably well and was much easier to cut up than I expected, it was hard as iron but my bush saw made short work of it. Having now formed up the walls of the planter with the cut up sleeper, I filled it up with potting mix and proceeded to plant into it – a passionfruit vine, a number of climbing bean seeds and a strawberry plant.

The passionfruit and the beans were to climb up some wire netting that I had tied to the tank and the strawberry was to grow over the surface and provide a mulching effect. So much for the theory. The passionfruit has done well and grew strongly for many years enabling me to harvest quite a few passionfruit before passing on to a better world.

The strawberry plant proceeded to pump out two reasonable berries and has done very little since- no fruit, no mulch, so there is a bit of work needed here, I suspect not enough light. As for the beans, after a good start they seemed to sit there and do nothing until I realized that the potting mix had been sterile so the rhizobium bacteria needed by the roots to fix nitrogen were not there. After the small addition of some veggie garden soil, well watered in, they were well away.

The harvest of the beans was excellent and they produced hugely for quite a while, but this brought in turn another problem. I do not eat beans, I grow them for my family who love them and in my unsophistication I assumed that "beans was beans." I usually grow dwarf varieties but saw no problem in changing to climbers. Unfortunately, I was informed early on that beans were not beans and that while dwarf beans were most welcome the new climbers tasted different and the kids at least would not touch them. Thusly was the population of bean eaters in the family reduced to one! Well at least the chooks, neighbours and rabbits appreciated them and I had learned another valuable lesson about growing our own food.

THE ROOF GARDEN



The 'roof garden' was set up between two tanks and designed so the vegies would grow up on to the garage roof.

Between the two previously mentioned water tanks is another piece of waste land that doesn't get enough sun to do anything with. So I made up a large pot of sorts, about a metre in diameter by a metre high, by making a cylinder of old chook wire and lining it with a load of dud pool liner left over from when the next door neighbours replaced their pool. As luck would have it they were digging in the new pool so I was able to fill the 'pot' with the sand and soil mixture dug out from the soon-to-be pool. Then all I had to do was mix through a bit of rabbit and chook poo and throw on a bit of hay mulch and I was ready to go.

The point of all this rigmarole was to try and make some use of the flat roof of the garage to grow some vine crops by planting them in the pot then training them up over more old chook wire up onto the roof. The vines that I chose were pumpkin and watermelon. The pumpkin was a self-sown one out of the veggie patch and the watermelon was grown from bought seeds. Both started off okay, but it took a while for me to realize that the pumpkin was, in fact, a bush variety so it didn't make it up to the roof until the sun made it a bit unpleasant up there. The watermelon made it quicker, but the coverage of the roof was a bit too sparse and we lost some fruits to the heat. All things considered though the harvest wasn't too bad, but next time I'll start with guaranteed Queensland Blue pumpkin seeds and get an earlier start.

The cylinder of chicken wire was lined with an old pool liner and filled with a growing medium of soil, manures and hay.

Two problems with this idea were that chook wire is not really strong enough for this sort of job, but it was all that was available at the time so that is what I used. Also, because of the nature of the setup it dries out rapidly in hot weather and so you need to water it regularly or all that you grow is dried fruit!

CHOKOS

These are another wonderful vertical producer, I planted one underneath our big Granny Smith apple tree and another next to the fence near the lattice that the next door neighbour (not the ones who put in the pool, the other side) put up. It was there to grow bougainvillea on but I thought I could pinch a bit of space. Since that particular choko had a close encounter with a whipper snipper it has been looking mighty average, but the one under the apple tree is going great guns and I expect a bumper crop this year.

In the intervening years since this was written we have had many a choko from the orange tree, or as it is more correctly known now – the choko tree. Every year they regrow and provide us with multiple chokos until killed by the frost. This year I reckon we must have gotten 200kg or more of them.

SCARLET RUNNER BEANS

Out the front of our house is an iron railing that I put a few years ago to keep people from falling of the front porch, just the thing to run some scarlet runner beans over. Scarlet runner beans are a perennial climbing bean that produce very decorative bright red flowers so there was no complaints from the flower garden of the team. Again I got away a bit late and by the time the beans got to flowering stage the weather was a bit hot for them to set seed pods, so although the show was attractive there was no produce. Unfortunately, all plants died from causes unknown before the weather cooled down enough to crop, so I had to write this one off as a flop. Mind you, if my other experience with the lack of 'consumer acceptance' of climbing beans is anything to go by, this may not have been such a bad thing!

CUCUMBERS

I have grown cucumbers of both types (apple and long green) first on a lump of discarded trellis, then on some old wire fencing draped over the wooden fence. Both worked well but you still have to thread the vine through or tie it on when it first grows, until it takes the hint and twines around the trellis by itself.

SNOW PEAS

This is a terrific legume that is great in stir fries or soup noodles and adds nitrogen to your soil. I start them off in a punnet, just to make sure that they sprout and then plant them out once they get to be a couple of centimetres. I have my veggie patches surrounded by a wire fence to keep pets, chooks and bunyips out (OK, OK the bunyips can just step over) and that is what I use to grow the snow peas up.
So there you have it, another growing season passed and some more lessons learned, whether the ideas work or not they are interesting and fun, but I still wish I had more land.

2.0 Trellises

2.1 Making the Original Trellis (2010)

OK, so there are times when I am not the sharpest tool in the shed. For years I have been growing snow peas, climbing beans, cucumbers etc up a number of moveable trellises that were leant up against the nearest fence. They were not secured very well and the frame was made from 20mm x 43mm DAR pine which is cheap and easy to work as well as being light enough to move around easily. The interior mesh is 25mm galvanised wire mesh, recycled from when we had a wire mesh fence around the veggie patches so at least it was sustainably sourced.

The trouble is that I didn't have enough, which made it difficult in the peak growing period and in the cooler months they sat there.....and rotted so that the next summer I had to keep repairing them. I really needed trellises that were permanently in place and were robust enough to stand up to the weather. After all I have been doing this for over 25 years. Time to take action!

We have veggie patches against the north, south and west fences, so I decided to make heavy duty fixed trellises along the south and west fences, where most of the growing space is. They would have to be robust enough to stand up to the weather and sourced from sustainable, recycled materials.

Luckily enough, the mob up the end of our road decided to get rid of some 5 and 6 metre lengths of 38mm x 90mm construction timber. They just sat it outside their house with a "free" sign on it. So I carried 5 lengths of it, plus a couple of 2 metre or so lengths of 100mm x 100mm stuff to use as uprights. I had the wire still floating around on top of the shed, so today was it.

I measured up and designed it to run across two veggie beds and be attached to the west fence. I cut the 38 x 90 to size as two cross pieces using my circular saw, and

before you yell “Cheat!” it was run through an inverter from the 12 volt system. I could have used a hand saw.....but I get impatient.

Using the circular saw, I cut a slot 90mm from the top of the uprights and two slots 90mm apart near the bottom of the uprights. Using a 25mm chisel and mallet I released my frustrations on the inoffensive timber and created two slots to take the top and bottom crosspieces. Feeling much better now I dragged it all out onto the back lawn for assembly. The crosspieces fitted into the uprights remarkably well, only needing the merest of persuasion from the rubber hammer.

I then secured them with a coach bolt in each corner and applied a strut in the centre made out of the 38 x 90 by the same means. The wire mesh was then secured by stapling them to the frame, hammering in a 12mm staple every 30cm or so. Once complete I found out just how solid this thing was, it was bloody heavy! I was only just able to lift it into position by myself, the mesh in my hernia repairs paid for itself today.....

I secured it to the fence with a couple of galvanised steel straps left over from a previous project and there you have it! I had built one for the south fence and liked it, so I built this one and even Linda said she liked the look of it. It now has snow peas planted at the base, so we will hopefully (we did!) get a good crop this year.

2.2 Re-furbing the trellis (2021)

One of the problems with growing your own is being able to keep things maintained so that they remain productive. A couple of months back the weight on the trellis along our southern fence from a really good crop of peas and snow peas resulted in the trellis succumbing to gravity, causing it all to fall forward. This was unfortunate, seeing as I didn't want to interrupt their yield and could not get access to fix it. I had to wait until harvesting was complete and the chook tractor had been through and cleared the area of herbage.

That had finally happened, and the trellis looked pretty sad, with the top rail broken, the bottom one sagging and all of the wire mesh falling off it. The wire mesh was still in good condition and the uprights on each end were perfect, it was only top and bottom rail which were in poor nick. The uprights are hardwood, salvaged from the original back deck when I pulled it down before building the new one and for being out in the weather for 15 years plus, they looked pretty good. They were still attached to the

fence by galvanised strapping at the top so they just sat there waiting to be re-connected to new rails.

The problem was I needed the timber to renew the top and bottom rails to be 4 metres long, and I didn't have any timber that length. What I did have was some 45mm x 90mm floating around but the maximum length was only 2400mm. Overall, I had enough timber to bridge the gap but they would need to be joined together somehow.

I hunted around and found one 200mm long x 60mm x 40mm galvanised angle bracket, this could be used to join two lengths of timber together. Unfortunately there was only one so I screwed that onto the bottom of the top rail, figuring that it would be under the most stress. Years ago I used a stack of 75mm long by 60mm x 40mm galvanised brackets to hold the original timbers edging the veggie beds, but these had started to come away as the timber in contact with the ground deteriorated. Thus I was able to find three of them kicking around and still in good condition.

I cut the timber for the bottom and top rails to size, so that all up they were 4 metres long and copiously screwed a galvanised bracket on each side of the join. I was unsure if it would be solid enough, but in the event it worked surprisingly well. I then positioned the top rail and affixed it to the upright with a coach bolt on each end (drilled first then secured with the battery powered impact driver and a socket). Once the top rail was secured, I followed the same process with the bottom rail. Thankfully Linda was on hand to keep the free end in place while I secured the other end.

With the framework in place it was a simple matter to drag out the old wire mesh, stomping on it to platen it out. Because it had been bent out of shape by the peas, and re-attach it using a staple gun.

I am really happy with how it turned out, it had been bugging me for some time and it was remarkably satisfying to see it back in usable form. Now we just have to wait and see how it copes with vegetation growing on it!

2.3 Making a cylindrical trellis

There are times when it is handy to have a trellis that can stand up by itself and support stuff you are growing in the veggie patch. It is even better if it is cheap and easy to build, with a minimum of tools and light enough to be easily relocatable. I made a couple a few years ago and have found them to be very useful in the veggie patch for tomatoes which require staking, cucumbers, peas, beans and just about anything else than climbs.

To make these wonderful things you need to get hold of a coil of wire mesh. The mesh needs to be big enough so you can get your hand through and retrieve the fruits or veggies growing inside the trellis. The wire mesh I used was 150mm x 150mm and this made retrieving errant fruit quite easy. The wire itself should be strong enough to maintain its shape while laden with fruit, although the cylindrical shape is as strong shape to start with, but flexible enough to bend when needed. The wire in the mesh I used was 2mm thick galvanised mild steel.

What makes the cylinders easy to make is that the wire mesh comes in a roll and its natural tendency is to keep that cylindrical structure, getting it to lay flat can be somewhat difficult but it makes forming the cylinder easy! The roll was 1200mm wide so that translates into a trellis 1200mm high.

Work out what diameter trellis you wish to make, I found that for the size of my veggie patches (1200mm wide) a trellis about 600mm to 700mm in diameter works well. Uncoil sufficient wire to give you a trellis the right size (it will generally remain in a cylinder anyway) by standing the coil upright and unwinding the wire mesh outwards. You will be able to do this by yourself but a second person to hold the coil in one place while you unwind the wire will make the job easier.

Once the mesh has been wound out to the required diameter, grab your trusty pliers or side cutters and cut the mesh from the roll so that the bit you cut off has protruding wires and the end of the main roll is flush with the last upright wire. This means that you have some wire protruding from the cut end of the cylinder which you can use to secure the cut end to the free end of the mesh. Then it is just a case of forming the cylinder and twisting the protruding wires around the horizontal wires in the first mesh of the free end. This can be done easily by hand but wearing gloves will reduce the likelihood of cuts from sharp wire ends.

To install the cylinder trellis, place it on the area of veggie patch where you want it to be (mulch first if you are going to). Then, to prevent it falling over when laden with goodies, secure with three or four tent pegs pounded well into the ground and at an angle, so they won't pull directly out. Plant your veggies around the inside or outside of your cylindrical trellis and watch them grow!

If you are really canny you might try installing an olla in the middle of where the trellis is going to sit before you put it in place that will keep your veggies well watered through the driest summer. This past summer I grew tomatoes this way. We had three months without rain and the only water the tomatoes got was when I refilled the ollas two or three times a week. They grew well too!

2.4 Making a Teepea!

One of the delightful things about climbing beans and peas (apart from enriching your soil by fixing nitrogen from the air) is that they can allow you to have a vertical harvest if you provide then something to climb up. The classic thing to do is to build a trellis up a fence or the side of a building but it is possible to provide climbing areas for peas and beans in the middle of your growing area too.

Apart from all the usual positives for growing vertically such as –

- You maximise the use of horizontal space
- Create shady areas – here in western Sydney the summers are wicked and some shady areas where the hot sun is broken down a bit can give the plants a chance to grow.
- It increases the amount of light and air getting to the leaves, great in winter of for those with a light deficit.
- Ease of monitoring for pests and diseases because you can see the leaves and produce more easily.
- Access to your beans and peas is improved; you can even harvest some while standing up.
- Your harvest is not trailing on the ground so it is cleaner and less likely to fall prey to crawling pests like slugs and snails or pick up disease organisms from the soil.

The area under a teepea can be a great place for the kids to play when the vines are grown, and they can even harvest their own healthy snacks as they play.

Making Your Tee Pea

We are talking about a tee pea here because that is what I made due to it being winter here, but it will work equally well for climbing beans or indeed many other climbing vegetables. You can use just about anything to make your tee pea from but, as always, recycled or home produced is best. You could use straight bits of recycled wood like tomato stakes, bamboo canes or as we did, the prunings from our exceptionally vigorous mulberry tree but any long and straight but still flexible prunings would work.

Step 1 – prepare your veggie planting bed in the usual way, including putting on the mulch. For me it was much easier to construct the tee pea through the mulch than to make the tea pee first and then spread the mulch over later.

Step 2 – Select your prunings to be all around the same length, this is not critical but will make things easier, and then put them next to the area where you plan to build your tee pea.

Step 3 – To see how the tee pea would fit into our 1.2m x 2 metre beds I could have made up a circular form the size I wanted but when I liked around the garage I found

that the folded up portable toilet/shower tent was 70cm in diameter and made a perfect form. I laid the form on the back of the bed and to one side so that the tee peas would be off set and the front one not totally shade the back one. Plus it gave the bed an arty look. (who said I don't have an artistic bone in my body?)

Step 4 – with the form in place I regularly spaced around it at roughly 10cm intervals and pushed the thick end of a mulberry pruning in to a depth of 150mm to 200mm so that they were more or less standing straight up. They were not perfectly straight so there was some leaning, but that only contributed to the rustic charm (or something like that).

Step 5 – with the prunings pushed into the ground securely, gather the top whippy bits in together and then tie them with string or twine (I used the blue bailer twine salvaged from our hay bales) and use secateurs to cut off any bits sticking too far up to give it a neater appearance (unless you are going for super-rustic).

Step 6 – I then got hold of some of the shorter, thinner, whippier prunings and wove them in between the uprights, both to give the tee pea some extra strength and to give the peas something to grip and they grow up along the tea pee.

Step 7 – I cleared the mulch in a circle around where the prunings dug into the veggie bed and planted some pre-grown pea seedlings around the perimeter of the tea pea

and watered them in. They are now growing nicely and eventually we will have a nice pea harvest.

Step 8 – repeat steps 1 to 7 and make a smaller tee pea in front (to the north) of the original.

Things to consider

- When constructing a tea pea be aware of what is to the south of it so you don't cause problems with shading of other garden inhabitants, especially in the colder months (like when you grow peas!)
- Don't use treated timber. There may be problems with leaching of the copper chrome arsenic compounds into your well grown veggies.
- You could put a pond in the middle of a big one to modify the microclimate and keep things warmer.
- You could leave the centre accessible for use as a play area although if you have constructed your tee pea in amongst your other veggies and/or in a veggie bed, playing kids can cause a serious dose of soil compaction.

2012 Update

Last year the teepea did so well and produced so bountifully, I am doing the same thing this year with a few minor changes. I have included an extra line of weaving to increase strength because the weight of the vines caused some deformation of last years teepea, and the front (northerly) one produced best so I am putting them at either end of a 3 metre bed so that there will be less shading, and I am putting them in earlier this year. I have had to harvest some sticks directly from the mulberry tree but this makes them more supple and easier to weave, but I have also been able to use some of the sticks from last year. Here's to a great harvest!

3.0 Growing

3.1 Fence pumpkins

I would like to tell you about my new invention, but unfortunately the pumpkins invented it themselves! As you have no doubt worked out, we don't have a huge amount of room to grow stuff on our block and pumpkins do have a tendency to ramble. I have grown them up over shed roofs, the roof of the garage and on one occasion turned the choko tree into a pumpkin tree but the yields have been variable at best.

This year I put the pumpkins in one of the patches against the western fence, along which I recently put a strong **trellis**. I planted a whole stack of stuff in the bed as well including Lazy wife beans (Hey! She wanted me to get them, I wasn't having a shot!) and a couple of cucumbers to make use of the trellis. I figured the pumpkins would fool around on the ground between the bed and the green house. The pumpkins took off fairly slowly and we got some beans and cucumbers before I noticed a funny thing.....the pumpkin vine yelled "Oh boy a trellis!" and started to climb for all they were worth. Over time the pumpkins wound their way all the way along the trellis, behind the shed to the area where the aquaponics system is going in and even took over the southern most of the western beds. They went berserk!

I used my standard process: planted the Queensland Blue pumpkin seeds in a punnet, potted them on into the cylinders and then planted them out into the bed when they had grown on for a few more weeks and all risk of frost was gone. After that it was just give them the occasional watering as required and then leave them to their own devices. They decided the trellis was fair game and even staged a takeover bid on the yard of the house over the back, although the attack was repelled with a few deft strokes of my neighbour's secateurs.

Normally we get somewhere between four and six pumpkins a year from our back yard but this year Ii was able to harvest nine at the end of the growing season, some of them much bigger than normal. When I was clearing the vine away from the aquaponics area I was able to harvest and use another couple of pumpkins form their earlier in the year so we had almost a dozen pumpkins from out small back yard – outstanding!

We have a series of bookshelves along our hallway and the pumpkins get stacked on top of them to be stored, assuming that the stem joining them onto the vine has withered. If the stem is not withered they will not store as ling and you need to keep an eye on them or they can rot, not a good look (or smell for that matter) in your hallway. We regularly store pumpkins for in excess of 12 months this way.

Once they are cut they don't last more than a week or two some plan some intensive pumpkin cooking and eating, freeze the excess or give it away to family and friends. Pumpkin is a low acid vegetable and so doesn't lend itself to preserving by bottling but can be made into jam or dried by cutting the pumpkin into pieces, peeling and removing the seeds, then bake until it is soft and dry, push through a colander and spread thinly (5mm thick) onto lightly greased pie pans and dry in the sun, using a solar drier or in an oven at 60°C maximum for an hour or two.

While I am not really fond of pumpkins, my family is and they are a great, storable provision that is very versatile; they can be made into baked pumpkin, pumpkin soup,

pumpkin scones (Flo's favourite for all those Queenslanders out there!) as well as being able to be included in all manner of soups, stews and casseroles. If that is not enough you can even toast the seeds in an oven, frypan or microwave and with a little salt you have a very tasty and nutritious homemade snack.

We are winding down towards winter here in Aus at the moment, but next spring give pumpkins a go on your trellis and see what you get.

3.2 Fence Garden

There are a number of ways that you can garden vertically such as the traditional trellis, making a pea or bean tepee or…….. making a fence garden the way I did, that is to say, a garden that can be hung on a fence, wall, or other vertical structure.

The idea is to take a bag made from hessian or other woven, free draining material and fill it with growing medium, then give it an outer wire mesh coat for stability, cut some holes in it and fill them with plants, then hang it up on the vertical structure of your choice. There you have it, a fence garden!

1. Hessian is good because it allows exchange of air and moisture into and out of the growing medium, it may be possible to use a woven plastic bag of some description like a chook feed bag (of which we have a whole stack) but hessian seems to be the way to go, at least for the first ones. We got hold of some sand bags from our hardware shop that are made out of hessian, they are 36cm wide x 86cm long and have a string tie on one side which I removed, but more of that later...

2. If you are going to use a commercial potting mix/growing medium it is worth getting the mid price range stuff, the el cheapo stuff is mostly rubbish and you won't be happy with the results. So, assuming you've got some of the good stuff, pour it into your hessian bag until it is about two thirds full.

3. Lay the hessian bag down and then pat it out so that it is more like a pillow than a sausage and fold the top over. You need to secure the top flap to the body of the bag and there are two ways (that I have tried anyway, there may be more) of securing it. One is to get a bag sowing needle, see the photo, and thread it with the string from the side of the bag, or get some string from elsewhere and sow the top of the bag to the body. I used a simple running stitch, but then again I am not very technical in the sewing department. If you are totally non-technical as far as sewing is concerned then thread some cable ties through the free end of the bag, and then the bag itself, then cinch it up tight. Do this a few times and the top will be well secured.

4. Next lay out some wire mesh on a flat surface, this is to provide a bit of support to the whole thing so if it is a bit rusty or tacky looking (read “rustic”) don’t get too concerned. I used some old chook wire because I had it hanging around and because I figured the holes would be large enough to plant through. Lay the filled bag on top of it with the sewn flap uppermost, so that when you turn it back over you will have a clean surface to work on.

5. With the bag in place, cut the wire with side cutters so that you have sufficient overlap to completely cover the back of the bag, then fold the long sides over and secure them to each other with cable ties. Fold the ends over and secure them to the back with cable ties as well.

6. The whole shebang should pretty much look like a hessian pillow covered in chook wire and it is now ready to plant. Turn it over so that all the fixings are on the back and the front is a smooth surface to work on. Using a Stanley knife or similar cut a cross into the hessian through the holes in the chook wire where you want to plant, if the holes are not big enough, cut away some of the wire to make them bigger. Fold the hessian back from the holes and plant into the potting mix underneath, then water the living daylights out of the whole thing to make sure the plants bed in OK.

7. Leave the set up horizontal for a week to allow the plants to recover from the shock of replanting, then hang it up on a fence or whatever and there you have it!
My intention is to have a northern wall of one of the sheds covered with these things, the idea being to fix some concrete reinforcing mesh (reo) to the wall of the shed and then hang the fence gardens off that. So far I have been unable to find the size of reo that I want for the price I want to pay, but I haven't given up yet.

Plants that will do well this way are leafy vegetables like spinach and lettuce, herbs, and perhaps trailing vegetables like cucumber or cherry tomatoes, and I am definitely using this technique to grow strawberries!

3.3 Vertical Garden from a Potato Sack By Angie Sweeney-Bas

I have a balcony on my apartment. This is the only “land” I have to work with to grow veggies. Because of this a vertical garden on the side of a wall helps to grow on all areas of the balcony. I have used mine to grow salad greens, but you could use it to grow smaller veggies or herbs.

Materials:

Potato sack or old clothes

Sewing machine

Scissors

Pins

Hooks

Plants

Mushroom Compost or nice soil

Method:

I chose a potato sack for a few reasons. Firstly it re-uses something, Secondly it already has the sack look to it which does some of my work for me and lastly the thread in the material is woven loose enough to hold the soil but still pass water through.

1. Mark out where you will sew the sack. I marked it out into 9 equal squares, but you could make them bigger and make 6 squares or 4 squares. I would not go smaller than 9 though.

2. Sew along the pins to sew both pieces of fabric together. It should look like the side of a rubix cube but stretched a little. My boxes were 6 inches by 10 inches.

3. Sew again over the squares but use the zig zag stitch to make it stronger.

4. Sew around the outer seams with zig zag stitch to strengthen them. Just make sure you do not sew the top together.

5. Sew buttonholes into the back piece of fabric at the top of each box, or as many as you feel it might need. At this point you could also use eyelets. I used 3 buttonholes

at the top of my sack. This was one per pocket since I had 3 pockets at the top. You could do more but I would not do less than 3.

6. Cut the tops of each box to create a pocket. At this point you could hand blanket stitch across the top of each pocket to stop fraying and make it stronger.

Growers of
Quality
Organic Potatoes
Tasmanian Gold
Australia

7. Use cup hooks to hold it onto your wall or a door. This is what I did, but you could use lots of things to hang it and it depends what you will hang it to. You could use wire, coat hangers, 3M hooks, string.

I read somewhere that planting the plants into Mushroom compost is best so this is what I did. It could be that it holds better in the material as Mushroom Compost is coarser. Might have nothing to do with nutrients. I also used Seedlings. Use seedlings if you are going to plant into Mushroom compost. Otherwise you can plant seeds into nice potting soil.

So far it has seemed to work well. The bag seems to hold the water too to keep the plants moist. I feel like the eyelets would be sturdier but it has not fallen down so far. I have planted it on a wall that gets lots of sun so it should work well.

3.4 Shed wall Veggies

This was an idea that I stole from my mate **Salman**, it used recycled materials and allows you to grow food vertically with a minimum footprint, so what is not to like?

We go through a reasonable amount of milk and until recently bought it in 2 litre bottles, but it was brought to my attention that the 3 litre bottles are made from thicker stronger plastic and can be repurposed to make all sorts of interesting things. One of the interesting things that can be made is a vertical veggie garden. However small containers like these have a tendency to dry out pretty quickly on a hot western Sydney summer afternoon so I have made them "self-watering" by using the same method as used in the wicking beds.

Making the Containers

I found it easiest to save up a load of milk bottles and then convert them to plant containers all at once. After washing them out I made a cut just in front of the handle and then down and around the neck so that the main area of the body was intact but there was enough of an opening for a plant to grow out. I used my small band saw to make the cut but you could probably use a Stanley knife (with a leather glove on the other hand!) or a coping saw, or perhaps even a jig saw would do the job.

Once the bottles were cut I got hold of a bag of 12mm scoria left over from a previous project and poured 20 to 30mm into the bottom of each bottle, then drilled a 6mm hole in the side at the surface level of the scoria. That way the bottom 20-30mm acted as a reservoir and turning the bottle into a self-watering pot or verrry small wicking bed.

Once the scoria was in place it was just a case of topping up the bottles with potting mix and then plating a seedling in each. With the containers now ready to go, it was time to mount them on the side of the shed.

Mounting the Containers

I needed strapping of some description to wrap around the handles and secure them to the side of the shed and after a bit of looking around I found “Abey” brand builders

strapping, used to join timbers together in construction work. The particular strap I used was 25mm wide x 0.6mm thick and at $4.50 or so for a 6 metre length it was pretty good value and it was pre-drilled with 6mm and 4mm diameter holes to make fitting even easier.

Having found my strap I cut off 10 x 90mm lengths using tin snips, one for each milk bottle, and bent them around in a U-shape with the ends flared out slightly to go over the rib in the shed wall. The shed is a colourbond steel prefabricated shed with stiffening ribs formed vertically in the walls and by taking the strapping around the handle and down each side of the rib, I could put fastenings through the strap and into the sheet metal rib. This gave the bottles a secure attachment.

I must admit my first thought was to drill and pop rivet the straps to the shed wall, but it occurred to me that if I wanted to take the bottles down for any reason, like replace the potting mix, replant them or even replace the whole bottle I would need to drill out the pop rivets first. So after a small amount of consideration, I decided to drill the ribs and then use self-tapping screws, put in with my cordless drill.

It didn't take long to put them up with the minimum of dropped screws and swear words. Although there were times when I was holding up the bottle, holding the strap in place, holding the screw on the end of the driver while driving it home, where a few extra hands would have been useful. As you could see I tried to be a bit artistic in mounting them, well I tried!

I have been putting them up in the middles of a pretty hot summer and while the seedlings are staying wet enough, they are still suffering from the strong sun and are not particularly happy. I need to give them a bit of protection with some shade cloth or better yet, plant earlier in the year and give them a bit of time to grow on before the real hot weather hits.

Jan 2014 Update

While the veggies seemed to do OK, the hot weather really took it out of them. The containers are too small and too exposed to maintain a steady and reasonable temperature for good growth. The best thing would be to get them well and truly established earlier in the season before the hot weather came and to install them in a less exposed position where they have some relief from the midday summer sun.

Another problem has reared its ugly head. The containers are starting to fall off the wall because UV embrittlement of the plastic means they can no longer support their own weight, so about 12 months is the best you can expect from the untreated containers. If you want to try this method I suggest painting the containers first with a non-toxic

outdoor paint to put a barrier between the plastic and the UV. Again, a more sheltered position would probably extend their life too.

3.5 Hanging Pots

Hanging baskets/pots are great because they increase the amount of food you can grow, particularly if you only have a small space, make unproductive spaces productive and are good for amenity (they look nice). Over the years I have tried them with varying levels of success mainly because they have one significant downfall – the dry out quickly, particular if exposed to the hot dry winds of a western Sydney Summer.

I am always on the lookout to increase the area we can use to grow productive plants and just recently have been re-evaluating some of our vertical spaces. I have not done anything with hanging baskets for years and certainly not since the new back deck was constructed. So I took some time to have a look at what we could do.

Where to Hang them?

Just to refresh, our deck is on the western side of the house, to reduce the amount of sun hitting the back wall of the house and making it more tolerable on those really hot days, without having to run the air con 24/7. It was a great place to install productive hanging baskets, but I had a bit of a dilemma. If I installed the hooks on the outside end of the rafters, the baskets would get lots of sun in the cooler months but they may overheat in the full heat of summer, If I put them inside the protective blinds and under the shadecloth covered area they would not get enough light, particularly at the start of the growing season before the plants started to spill over the edge and trail down over the pot. What to do?

After much consideration, and to illustrate that light shines through to even the dullest places at times, I had my answer. As they say in the taco commercial - “Por que no los dos!” ie, why can’t we have both? So that is what I did, I installed two sets of hooks for each hanging basket so that they could be hung in the outer sun drenched area or the inner more protected area as required.

What Pots?

The next decision was which pots to use. I wanted hanging baskets that were a decent size and after some looking around I found a brand that offered 340mm wide, 8 litre plastic self-watering hanging pots which were Australian made, so I bought half a dozen. I am not a huge fan of commercial self-watering pots because I find that the reservoir is usually too small and they are more of a gimmick than serious gear, but in this case I figured every little bit helps.

Mind you, I had no intention of leaving them like that. Before I put soil into the pots I made up an olla composed of two 12cm unglazed terracotta pots connected with silicon sealant, and with the same sealant blocking up the drainage hole of the bottom pot. This will give me a reservoir capacity of a bit over a litre, plus whatever is in the self-watering pot reservoir itself.

What plants?

This one was fairly easy. I wanted to grow productive plants which would trail over the side of the pot and look nice and jungle-y, so I chose cherry tomatoes and cucamelon, plus maybe a bit of luffa and Lebanese cucumbers as well.

They have only just gone up, so watch this space for updates!


Cucumbers & Tomatoes

3.6 The potato cage

No, I do not grow really vicious potatoes that need to be isolated from the other vegetables, but I use this handy technique to maximise my potato yields while not taking up space in my regular veggie beds. First a bit of theory.

Potatoes have an interesting habit; if you heap up soil or mulch around a growing potato plant they will form more potatoes. If you keep up the process you will cause the plant to produce many more potatoes than if they were just grown in a field in the normal way. My father taught me this by showing me how to grow a potato in a 20litre steel bucket many, many years ago.

There are a number of ways to accomplish this, planting in the bottom of a 20 litre bucket or 200 litre drum, then adding more soil or mulch as the plant grows, or planting in a tyre, then adding tyres and filling them with soil or mulch as the plant grows. I personally haven't had much success with the tyre method, the potatoes tend to die on me, and there have been some questions about the tyres leaching toxic materials that I haven't seen resolved to my satisfaction. So I will tell you about the way I do it – constructing a potato cage.

When I took some time off work a few years ago, one of the things I did was to stop growing potatoes in the regular veggie patches and install two potato cages. These are constructed by getting hold of four star pickets for cage you intend to build and then hammering them into the ground to form a square about 1 metre on each side. Any flexible wire mesh will do to make the sides but I had some 1 metre wide chook mesh so that is what I used. You will still need access to the inside of the cage to add more organic matter and harvest the potatoes so wrap the free end of the mesh around a star picket and then run the mesh around three sides to form a three sided box. Cut the mesh to size allowing enough overhang to wrap around the end star picket. You can then make a gate for the cage by attaching the free end of the remaining mesh to one of the star pickets at the open end of the box and then running the wire across the open and of the box. Cut the mesh off so that there is enough overhang to be wrapped around a piece of wood, pipe, steel or whatever you have to secure the free end of the door.

I used a piece of tomato stake but anything solid enough will do the job, just measure and cut it to the same width as the wire mesh and then wrap the free end of the mesh around the wood or whatever and twist any available strands of mesh around it so that the wood stays at the end of the mesh. You can then pull the mesh to the star picket and just wrap it around so that it forms an access gate into the potato cage.
Now that your potato cage is complete, it's time to prepare for planting. Around here we tend to plant out potatoes in August or September. Dig the area of soil within the cage over and add some compost or well rotted manure to give the potatoes a kick on. Then dig down a bit, remembering that the new potatoes will form above the originally planted one, and make four equidistant holes so that they are evenly spaced within the cage. Grab your seed potatoes, if you have left them out to give the eyes a chance to sprout, so much the better and pace one in each hole, ie four per cage.

I will digress here slightly, but one of the issues that I have had is making sure the potato plants are well watered after lots of organic matter has gone into the cage. With that mass of organic matter over and around the potato plants I can't be 100% sure that the roots are getting watered no matter how much time I spend pouring water into the cage. So this year I have constructed two watering tubes, one for each of my potato cages. I did this by getting hold of a 3 metre length of 50mm PVC water piping and cutting it in half, giving me two 1.5 metre tubes (1.2 metres would have done the trick but excess would have been waster anyway so.....). I drilled four lines of five 3mm holes a centimetre apart vertically up the tube so that each line was at 90° to the next, and then put a cap on the end of the pipe so that water pumped into the tube will come out the holes and water the potatoes. Initially there is not enough mulch to suppost the pipe so i have tied some blue bailer twine between two diagonal star pickets and the tube to keep it upright. Well, that is the theory and so far it seems to work.

To use your potato cage, plant the four seed spuds of your choice in the pre-prepared holes as previously mentioned and then cover with soil and mulch. Once the potatoes start to sprout through the mulch add another layer of mulch so that the shoots are just covered. Straw will work but hay is better and you should also mix in some high nitrogen stuff like chook poo or compost to provide some nutrients and help the mulch break down. Once the potato cage is full of mulch, let the potato plants mature while keeping them well watered, the mulch will reduce in volume as it breaks down so this is normal. When the potato haulms (the green bits) die off, open up the gate and pull out your organic, super tasty spuds. Protect them from light to prevent them from greening up and they are ready to eat and enjoy.

Update 2013

Unfortunately the potato cages were never as productive as I hoped. A large part of the problem was the need to find lots of organic matter while the potatoes were growing rapidly in spring and early summer, and for us this meant buying it in. The cages were removed last weekend and we will be putting a veggie bed or two in to replace them, and they can be used to grow veggies all year 'round. I still have intentions to grow veggies but now in self watering containers and in the normal bed rotation.

Update 2024

Something which may have also contributed to the lack of productivity is that I did not ensure that I obtained indeterminate seed potato varieties to go into the potato cage. Determinate potatoes will get to a certain point and then that is all you get.

Indeterminate potatoes will keep growing and producing potatoes as you keep filling the cage up with growing material, and until they are killed off for some reason (eg Frost). It is only comparatively recently (ie within the last 10 years) that I found out that there are in fact determinate and indeterminate potato varieties. So there you go!

4.0 Other Stuff

4.1 The Three Sisters Garden

Introduction

I have always been interested in the history of people's struggle to provide themselves with food and while sifting through a mound of information about such things I found something I could try out in my backyard. In his book about the domestication animal and vegetable foods called "*Seeds, Spades, Hearths and Herds*", Carl Sauer talks about a complex of three food plants grown together that provided the ancient native Americans with most of their staples. It kept the Amerindians going for thousands of years and was grown very widely, as far north as southern St Lawrence and northern Missouri rivers, on the fringes of the Sonoran and Arizona deserts through to the highest patches of available soil on Mexican volcanoes. All things considered it is a fair bet that it could be readily adapted to most if not all Australian climates.

This amazing mix of plants is composed of maize, beans and squash, and in Permaculture terms this group of mutually beneficial plant species is called a guild. The term "guild" is defined by Bill Mollison in his book "*Permaculture – A Designer's Manual*" as "*an harmonious assembly of species clustered around a central element (plant or animal) . This assembly acts in relation to the central element to assist its health, aid our work in management, or buffer adverse environmental effects*." In this case that central element is the corn plant.

The Theory

Maize (corn)

This crop provides an upright stalk for the beans to grow up and the ears of corn themselves at harvest time, hard or dent corn being grown rather than sweet corn because of the storability of its produce., although some sweet corn could be grown if distances could be maintained to prevent cross pollination (approx 300 metres). Corn

provides some protein in the diet and a small amount of fat but tis major contribution is carbohydrate.

Where the growing season is long the corn is planted first, then the beans and squash are planted into the hills of growing corn. If the growing season is short the three would be planted together with an early maturing variety of corn being selected. Only open pollinated varieties should be sued so you can grow the next years' crop with the seed saved from last years' crop.

Beans

These legumes fix nitrogen from the air which is then used by the corn and the squash, allowing for increased yields from those two crops. Climbing beans should be used rather than dwarf varieties so that they can take advantage of the corn stalks in getting their share of light and they also produce over a longer period. The beans can be eaten direct from the vine as a fresh vegetable or allowed to mature and dry out and the seeds harvested for eating at another time. Either way they provide valuable protein in the diet as well as fibre, vitamins and minerals.

Squash

The squash or pumpkins are prostrate growers, spreading over the soil and completing the ground cover reducing evaporation and acting as a mulch. The squash provide a variety of edible products –

- The male flowers can be picked and used in soups, stew and salads or stuffed with rice or cheese; battered and fried (which is how I like them).
- The immature fruits can be thinned out and used as a cooked green vegetable.
- The mature fruits can be picked and stored for later consumption of the flesh.
- The seeds of the mature fruit are rich in oil and protein and can be roasted and eaten.

In Practice

Well, so much for the theory, how does it work when translated into a backyard? Not as great as I hoped, but in my own defence I must say that the Amerindians knew their varieties and had refined things to a fine art over several hundreds or thousands of years. I also learned a lesson about this system: it is better suited to an extensive culture system than the intensive small plot system that I used. Now that I have finished justifying myself, this is what I did and these are the results that I obtained – The area of ground that I used was about two metres by three metres and had previously had a cover of grass and had not been used to cultivate vegetables of any sort. I cultivated it to a depth of about 25 to 30 centimetres and dug in lucerne hay and chook poo as a fertiliser. I used the following varieties –

- Corn – Callan open pollinated sweet corn from Phoenix seeds.
- Beans – stringless blue lake
- Squash – Green button

The corn and squash were planted at the same time in early November, then after the corn had two weeks growth one bean seed was planted next to each corn stalk. The corn was planted with about 15 centimetres between each plant, the squash around the outside of the plot and the beans about two or three centimetres away from each corn stalk.

The Results

Corn – Yield from the corn wasn't bad with most plants producing decent size primary cobs, but the secondary cobs were disappointing with none reaching edible size. This was possibly due to the close planting and the resulting competition or perhaps the late planting of the corn. Also, to provide lasting support for the long growing beans, the longest maturing variety of corn should be selected.

Beans – The beans have yielded consistently and well although some increase in yield may be possible with increased planting distances. Giving the corn a few weeks head start seems to be the correct idea and even leaving it a bit longer before planting the beans, say and extra two weeks, may be even better.

Squash – The results for the squash were very poor with less than half a dozen fruits harvested. The squash did have a chequered career from the outset with the seeds being dug up not once, but twice by marauding chooks and so requiring replacement. From this unpromising start germination was slow with only three plants coming up and only one of these attaining any size. I think if intensive planting is to be used the squash should be given a head start, with enough time to be up and growing a couple of weeks before anything else is being planted. As it was, byt the time it really got going, the squash was all but shaded out by the corn. In an extensive planting system with greater planting distance between the corn plants, the squash would have had a much better chance of surviving to play its part in the guild.

Overall – The corn and beans combined to give a dense layer of foliage which meant that the weeds had no hope, but also raised difficulties for harvesting. The corn cobs were easy to pick but trying to find the bean pods against the dense green background was like playing "Where's Wally"! Apart from a few small beetles on the corn cobs and a bit of mildew on what little of the squash there was, problems with pets or diseases were non-existent.

Conclusions

• In an extensive cultural situation this system could be very productive.
• There is a need to experiment with varieties to establish the correct ones for your area.
• There is a need to establish the correct planting dates for each crop.
• With a bit more knowledge and (dare I say it) luck, this could even be productive in an intensive system, within limits.

4.2 Assisting the Choko Tree

If you are not already aware, the choko tree for which the site is named is an old orange tree in our back yard, close to the water tanks on the back of the garage, which the choko vine grows up every year. Well this year, in the lead up to Sustainable House Day, someone decided that things looked a bit tacky and trimmed off the lower branches of the choko tree. What this has meant is that the choko can no longer scramble up over the tree and onto the roof of the garage as it is used to and has done in previous years. It is now creeping along the ground towards the garage, and we can't have that!

To provide access to the tree again I have put together a strong mesh screen to give the (already strongly growing) choko vine a toehold so it can climb up to where it needs to be.

The frame I made out of some 32mm 86mm pine which I had deconstructed from a previous project. When I measured the distance from the soil to the lowest branch on the choko tree it turned out to be about two metres, far too far for the tendrils to make it unassisted. So I cut the side rails to 1800mm long with the cross braces being 650mm

long. The heave duty wire mesh I was using for the choko to climb up was only 1000mm long by 570mm wide.

To make the frame I just screwed the cross pieces to the side rails using two 8 gauge 50mm screws into each corner. The mesh I attached to the frame suing my battery powered staple gun.

All I had to do then was to install the frame so that the choko could be induced to climb up it. The installation was simple, I arranged the frame in front of where the choko vine was then rammed in a star post on each side of it. I wired the frame to the star posts and it was secured. I was able to put most of the vines onto the wire mesh although a couple broke off, but there are plant more and it is streaking (alright, growing slowly) up the frame from the ground to the tree.

Now everybody is happy (except maybe the orange tree….)

And after a couple of weeks!

4.3 Making a 'Strawberry' (or whatever you want to grow) Tower

Yes, I know, this is hardly vertical veggies, but it is an interesting technique, which might be adapted to growing veggies vertically as well as strawberries, so I thought I would include it!

Unless you live on acres, there never seems to be enough room to grow everything you want to and that is particularly true in the urban/suburban setting. There are techniques, however, which help you maximise what growing space you do have. Vertical gardening is one technique, in this case by constructing a strawberry tower. I call it a strawberry tower because that is what I will be using mine for but it could just as equally be a herb tower, lettuce tower or tomato tower or a "whatever you want to grow in it" tower.

Raw materials

To make a tower like this you need a 205 litre plastic drum, preferably one that has not held anything nasty. The one I got hold of had been washed out well but even so it had only contained sorbitol, a food grade sugar alcohol sometimes used as a sweetener in sugar-free gums. To be sure I also gave it a wash out with water too!

To keep things fertile over time I wanted to construct a worm tower in the centre so I got hold of a one metre length of 100mm plastic tubing to house the worms. I also needed something for the strawberries to grow in so I got hold of some potting mix, compost, wood ash and sulphur (more about these later). I needed some rocks to go in the bottom to ensure good drainage but had some scoria hanging around from previous projects so I decided to use that.

I also needed a lazy Susan bearing. The whole idea behind a tower of this type is that you can grow plants over its entire surface and being round most of it will get some sun at some time of the day. The trouble is that the quarter which faces south will get no direct sun, especially in winter, which for a fruiting crop is critical. I planned to get around this by placing a large, heavy duty lazy Susan bearing under the drum to make it easier to turn, and so far it is working.

I worked out where I wanted the tower to go so it would get sufficient sun and be reasonable accessible, which turned out to be the northern end of our front yard. Once I knew where it was going I grabbed a 600mm x 600mm concrete paver which was sitting doing nothing in the back yard. I used it to provide a stable base for the bearing

to sit on, which would be where the drum would finally sit. The land slopes a bit so I had to dig out a bit of soil from the high end and check it with a spirit level to ensure it was level enough.

Constructing the Strawberry Tower

The first job was to remove the top of the drum, it was a closed head drum so it had to be cut off, but the drum being plastic made it easier. To remove the top I simply drilled a hole in the top at the edge the size of a jigsaw blade, then inserted the jigsaw and cut around the inside of the rim. Quick and easy, but it did create lots of small bits of blue plastic, which got, everywhere! I then turned the drum upside down and drilled some 12mm drainage holes around the edge of the bottom of the drum.

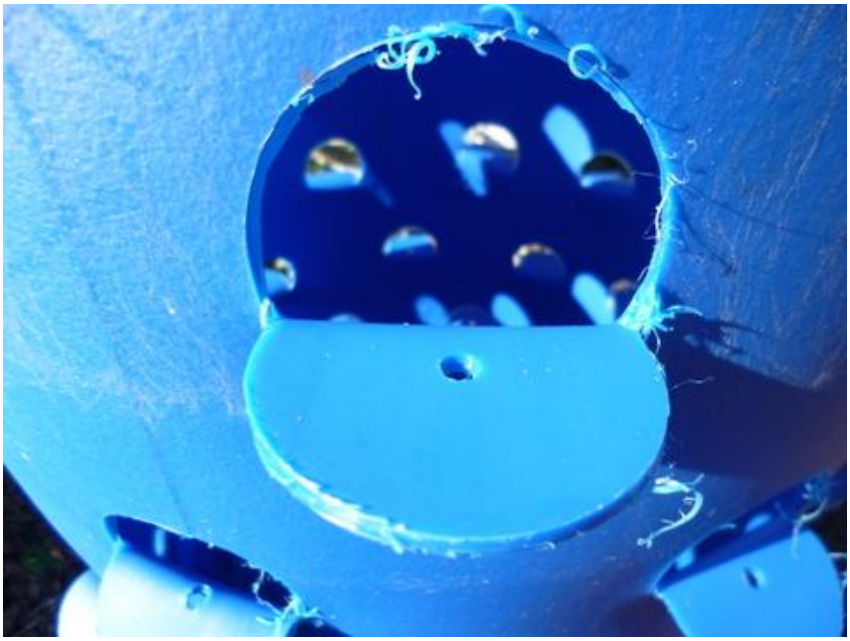
With top cut out and the drain holes in it was time to turn it back over and mark out and cut the holes where the strawberries are to go.

To mark it out, I ran some string around the circumference of the drum and then used some bits of tape to mark it off into 10 equal sections. I then used the string-and-tape

to measure out 5 rows, about 200mm apart down the sides of the drum, then marked them with a dot of permanent marker. Using a small 1/8" drill I drilled a pilot hole into each of the marks.

To make the holes where the strawberry plants were to go I got hold of a hole saw, which I use with my drill. You can buy sets of hole saws and the largest one in the set is usually 50mm across, but sometimes bigger can be better and this is one of those times. I had a 70mm hole saw which I had bought to assist with a previous project so I used that. After getting the central drill lined up on the pilot hole, I drilled in then tilted the drill and hole saw up so that it only cut through the top half of the circle. The bottom half was still attached because I wanted to use it as a flap for the strawberry plants to grow out onto.

To form the flap I used my heat gun (looks like a hair drier but runs much hotter and is used to strip paint) to run hot air back and forth over the plastic until it was soft, then pushed the flap out and held it until it cooled down, it then remained fixed in place. Doing this took a couple of hours but was made easier by the fact that I had already mounted the drum on the bearing, making it easy to sit next to it and turn it around as required.



With the holes in place I made the worm “tower” for the centre. It was just a case of getting hold of the metre length of 100mm plastic tubing, drilling holes in it and then holding it in place while I filled the strawberry tower with growing medium.

Filling the strawberry tower

The first thing I did was to set up the worm tower in the centre of the drum so that I could fit the growing medium in around it. Then, to ensure good drainage I poured in scoria up to a level of 50mm to 75mm in the drum, then levelled it out with a hoe. With drainage assured I could put in the growing medium.

The growing medium was a mix of 50 litres of potting mix, 25 litres of compost and about 500mls of wood ash and about 150mls of elemental sulphur added in. The potting mix provides the basis of the mix with extra fertility provided by the compost, the wood ash is to provide extra potassium for good fruiting. The wood ash will, however raise the pH of the mix, but strawberries prefer the pH to more on the acid side so the elemental sulphur was included to drop the pH back a bit.

I made the mix up in my wheelbarrow, using a shovel and hand hoe to mix everything until it seemed to be pretty homogenous to me. To completely fill the barrel I needed to make up 3 full mixes, with a bit of compost left to go on the top.

I filled the barrel up with growing medium until it was just level with the first row of holes for the strawberry plants. I then separated out enough plants so that I had one for each hole, then arranged them on top of the growing medium so that the roots were inside and the crown of the pant was level with where the growing medium would come to. I then shovelled in more growing medium, covering the roots of the layer below until it was just below the next level of holes. I repeated the process until the barrel was full and all of the holes were planted with a strawberry plant.

To finish of the process I filled up the last 100mm with compost and then added some sugar can mulch. To make sure that there were no spaces I watered everything in from the top until some water was coming out the bottom. The worms and veggie scraps will go in once things have had a chance to settle down.

Review and Lessons Learned – 2023

While it did work fairly well, it was not without its problems –

1. First off, there were too many holes/growing points. It would have been better to put in half as many and in the end I wound up using every second one.

2. While the lazy Susan was a good idea, just using the bearing meant that it filled up with dirt and rubbish and after a few months refused to turn. I wound up replacing it with a similar bearing, but this time I screwed a disk of 20mm plywood (pre-painted green) on each side of the bearing and this worked much better. It is still important to give it a turn or two every few days to keep it turning freely.

3. I installed it in the wrong place, there was not enough light for the strawberries due to the shade from the mulberry tree, plus it was not in one of the more travelled areas, so it reduced the amount of turning that it needed. So, I emptied it, transported it around the back and installed it on a plinth of sorts, right next to the back door, but now the bananas have overshadowed it. So back to the drawing board!

5.0 Resources

Vertical Gardening – Derek Fell – Rodale Press (US) 2011 ISBN 978 1 60529 083 6 – The book opens with a discussion of what constitutes vertical gardening and its advantages, moving from there into choosing your site and preparing the soil. This is followed by several chapters discussing the vertical gardening options (arches, pergolas, trellises, hanging planters etc.). Composting, seed starting, pests and diseases, watering pruning and fertilising (all organic) are covered and there is a section on fruit and vegetables suitable for vertical gardening. The book has some line drawings and colour photos as well as a fair amount of black and white photos.

Vertical Vegetables and Fruit – Rhonda M. Hart – Storey Publishing (US) 2011 ISBN 978 1 60342 998 6 – The book is divided into 3 parts, the first part covers why you should garden vertically and the sorts of techniques used such as trellises, teepees, hanging, stacking, making towers etc. The second part goes into the details of growing annual vines vertically like beans, peas, cucumber and squash; and part three covers vertical growing of specific perennial fruit crops like berries, grapes and kiwifruit. There are no photos, but some coloured line drawings which work very well.

Gardening Vertically – Noemie Vialard – W. W. Norton & Co (US) 2010 ISBN 978 0 393 73370 9 – Translated from the French, the subtitle of this book is “24 ideas for Creating Your Own Green Walls”. The book starts out with some history around green walls and then describes how you can take your own wall and set it up and maintain it for vertical gardening. The next section covers getting plants on your green walls, which is then followed by different ideas for how you set out a green wall on a theme eg foliage wall, aromatic green wall, epicurean green wall, a wall of mosses, a wall of ferns etc. Lots of colour photos with some colour sketches of the ideas for the walls.

Grow a Living Wall – Shawna Coronado – Cool Spring Press (US) 2015 ISBN 978 1 59186 624 4 – The books starts with lots of photos of the what and why of living walls, then in Part I moves into commercial systems available, which one you should choose and what tools you will need. There are then short sections on getting started, watering the wall, soil and compost, and choosing and obtaining plants. Part II consists of a whole stack of living wall ideas and how to build them including a pallet wall, and insulating wall, an aphrodisiac wall garden (!), a culinary garden, aromatherapy garden, pollinator garden etc. Lots of colour photos and step-by-step instructions.

Growing Up The Wall – Sue Fisher – Greenbooks (UK) 2013 ISBN 978 0 85784 109 4 – This small book also covers green roofs as well. It is divided into 2 sections, the first is "Planning Your Space" and covers assessing your site and planning green walls and roofs, choosing the right growing medium and considerations for watering the plants. It also covers the use of containers and criteria for choosing plants. Section two is a directory of edible plants suitable for green walls and roofs divided up into vegetabls, fruit, herbs and edible flowers. There are some colour photos and few line drawings.

The Vertical Farm – Dr Dickson Despommier – Thomas Dunne Books (US) 2010 ISBN 978 0 312 61139 2 – This is an interesting book, not a "how to" so much as "what is possible". It written entirely theoretically, since at that stage no one had actually implemented anything yet. The idea is that by taking over certain buildings within the city, installing solar powered grow lights and hydroponics the city could feed itself. I am not a fan of the hydroponic approach because it still requires the production of chemical fertilisers from limited resources, but this approach could improve city resilience and reduce food miles. I think greater analysis is required on the carbon footprint of the whole system. There are 4 colour photo sections scattered throughout the book.