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Edible Landscaping & Regenerative Land Development

A No-Non-Sense Guide to Establishing Permaculture Food Forests on Boring Lawns

33 practical, down-home, head-ache saving tips

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Hi folks,

Over the past three years, I've had the privilege of playing a project management & landscaping role for the design and establishment of a handful of food forests from scratch. The biggest was in [northern Saskatchewan, climatic zone 1a](#). The others have been at (sub)urban sites in Victoria, BC. Another design project was in [Oaxaca, Mexico](#) and the owner's are working at installing the design this year. Its pretty cool seeing them go from design through to completion. I especially enjoy the client-relationship, as they watch their lawns (/underutilized space) transform into an edible retirement plan.

Having gone through the process a number of times now, I think it's time to share some lessons I've learnt. Hopefully this can save you some head-aches and allow you to build on the successes.

For my part, I've been fortunate enough to learn from applied horticulture / permaculture experts like Geoff Johnson (whose [incredible urban food forest](#) in Victoria, BC I've lived in for the last two years) to Richard Walker (who ran a food forest for over 20 years in the Okanagan). Geoff lives and breathes urban permaculture like no one I've ever met. He taught me many tricks of the trade and perhaps most importantly, how to manage, harvest and process from a mature, intensive food forest. Richard was the keynote instructor in a Food Forest Workshop that I hosted in northern Saskatchewan at [1/4 acre demonstration food forest](#) that was established the year before. It was [my business'](#) inaugural demonstration project. I've also learnt a lot from my Permaculture Design Certificate teacher [Jesse Lemieux](#), who was a part of the [Greening the Desert project in Jordan](#) and knows earthworks very well among other things. We've collaborated on some neat permaculture earthworks projects. Also, I owe a great deal to my good buddy Jason Nyberg with whom I landscaped with for the last 2 years. Over long days of digging trenches, moving mulch and laying down cardboard, we're pretty sure we've solved most of the world's problems over 'on-the-fly' discussions.

Other inspirations have been [Gaia College](#) (Certificate in Ecological Landscape Design & Organic Master Gardener Certificate) and various [other permaculture courses](#) ([PermacultureBC](#)). The [Compost Education Centre](#) is a great demonstration site with knowledgeable staff. Spring Ridge Commons is another great urban food forest here in Victoria that is a must see - an edible public park established in the most grass-roots way possible.

Many great books have also been instrumental, including Dave Jacke and Eric Toensmeier's [Edible Forest Gardens](#) and some others listed below. I look forward to learning more this growing season at [Wild Edge Garden Farm](#), with my lovely plant-nerd partner Solara Goldwynn. We'll be guilding and expanding the food forest out there in Deep Cove to produce as much low-maintenance food as possible.

What follows is my attempt to take everything I've learnt from these experiences and apply

it to the very specific topic of 'starting a food forest on a lawn'. I'm finding more and more people are interested in converting their lawns into a compact, aesthetic production orchard / food forests as a means of:

1. growing high-value organic nutritious produce in their yard
2. not having to plant every year like annual gardens
3. getting more exercise and being outside
4. learning the tricks of the trade as a hobby
5. connecting with their cultivated ecology
6. having a more interesting yard to show their friends

These tips are geared towards the urban context where a beautiful landscape is as important as yield. However, most of these tips apply to the broad acre as well.

Anyways, here we go.

What is a Permaculture Garden / Food Forest and Why Should We Plant Them?

First of all, they're healthy and tasty! Many people in the general public are unaware of the plethora of great perennial food crops we can grow here on the West Coast:

figs, chestnuts, mulberries, seabuckthorn, gojis, apples, peaches, pears, grapes, currants, blue honeysuckle (haskap), blueberries, oca, chives, good king henry, cranberries, comfrey, echinacea, cherries, autumn olive, saskatoon berries, strawberries, schizandra, tea-plants, and many more..

These are just some of my favorites. For an exhaustive list, check out this publication by [Rain Tenaqiyah, entitled West Coast Food Forestry - A permaculture guide.](#)

A food forest is a method of planting of all these crops together in a way that they work together to create a healthy, organic, cultivated, edible ecosystem! We are trying to replicate natural forests and savannah shrub-lands in structure and in function.

For a more thorough conceptual analysis of what exactly a food forest is, [check this out.](#) For those of you who 'get it' and want to get into the details, carry on.

Without complicating things, from my perspective, a successful food forest / permaculture garden usually involves most if not *all* of the following:

1. Working with the slope/contour - building contour beds, swales, ponds, huglekulturs, rain gardens to optimize winter rainfall and summer irrigation

2. Multistory food production - fruit trees, fruiting shrubs, herbaceous perennials, ground covers, annuals, root crops and edible fungi
3. Permanent pathways and permanent planting beds (wood chip pathways preferable)
4. Heavily mulched and cover cropped soils
5. 20-30% nitrogen fixing plants (much more in the beginning)

They are a good thing because they are:

1. increasing yield with decreasing energy input
2. perennial in nature, meaning you're not planting every spring
3. creates a beautiful landscape
4. habitat for local flora and fauna
5. they produce even if you go away on holidays (particularly after getting established)
6. they get you outside, fascinated with the new insects, birds, bees and fungi that continue to pop up unexpectedly!

If these principles are in place, you are on your way to fertility and high yield over the long term!

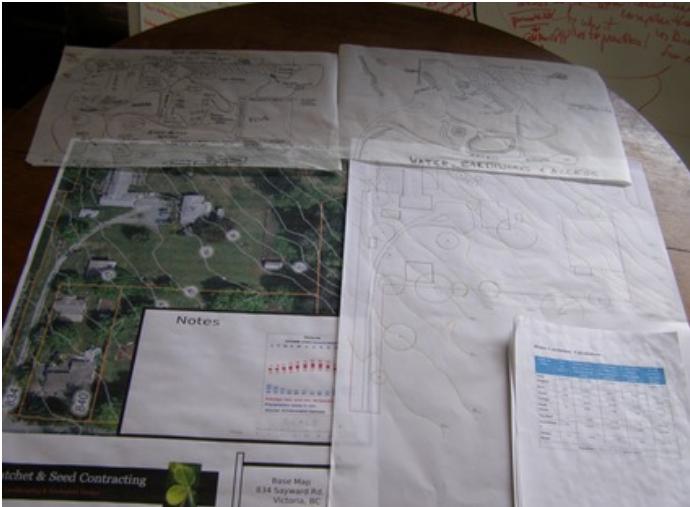
How to Start a Permaculture Garden / Food Forest

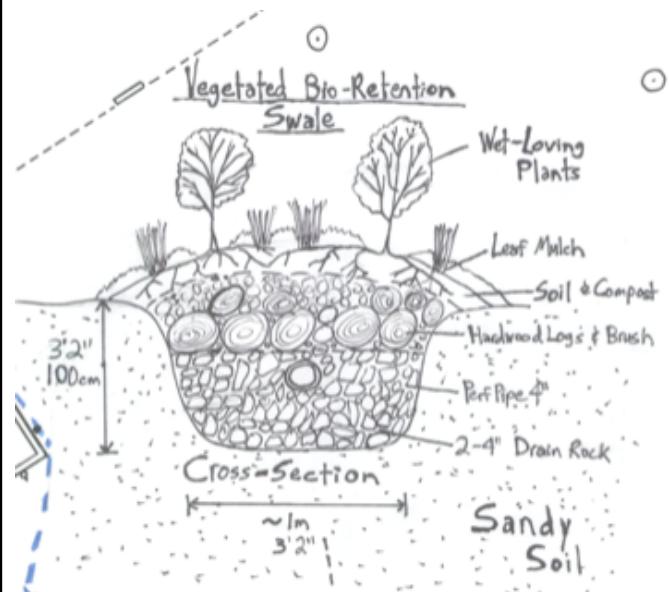
The following table is meant to be an open-sourced, working document, so if you have an addition, please follow the template and send it to me at hatchetnseed@gmail.com. Your name will be added to the list of contributors.

* All photos were taken by author unless otherwise marked.

Phase	Tip	Details
Planning & Design	Define your project	<ul style="list-style-type: none">- define the scope and purpose of your food forest; there is a huge continuum from low maintenance row-crops to highly managed, intensive food forests- define your project budget; be it money, time, helpers, trade, whatever, you need a very clear project budget- how much can you invest in the establishment? this will determine the size- will you be able to prune, irrigate and manage it? Who will?

Phase	Tip	Details
	Phase your project	<ul style="list-style-type: none"> - big or small, be realistic; what do you want to get done this growing year? - you do not need to buy every plant that will ever be in your food forests on day one - focus on soil building as your number one priority once you hit the ground, don't worry too much about plants yet - ensure have a cover crop to repair the soil with after disturbance
	Invest in your food forest!	<ul style="list-style-type: none"> - food forest is 50-80 year, low-maintenance organic food production system that gets better with time.. we would be wise to give it the investment it needs from the start for best results - be it time, money, labor, machines, mulch, plants, seeds, whatever, don't skimp out! - if anything, just reduce the size/scale if you're tight for resources - we're replacing conventional production methods fuelled by gas and diesel (very dense forms of energy), so naturally, its going to require some energy to get it established - however, it will pay for itself in long term with reliable, organic, nutritious produce.. think of it as your retirement plan; when/if I retire, I'll be a very happy man if I can get exercise, a beautiful ecosystem <i>and</i> nutritious food out of my yard
	Get inspiration from other food forests	<ul style="list-style-type: none"> - visit food forests, sketch them, take picture of them, take note of what you like and what you don't

Phase	Tip	Details
	Create a base map	<ul style="list-style-type: none"> - whether its some scribbles on a napkin or a hand drafted 24 x 36" aerial photo, you would do best to create a base map so you can really get it right - for those of you in Victoria, the CRD Atlas has to scale aerial photos with 2 m contour lines; these are invaluable for getting to work quickly - many other cities have GIS services for free 

Phase	Tip	Details
	Start with water optimization strategies	<ul style="list-style-type: none"> - know where water is moving; read contour lines; use slope to your advantage - by planting trees and shrubs in contour planting beds, we can ensure that winter rains are pacified and that summer rain/irrigation is maximized - this is flood and draught management all in one swoop - it works even in tiny backyards, trust me! - dig swales, rain gardens, hugelkultur swales, wherever it makes sense 
	Generally, plan for 3 ft pathways & 4 ft beds	<ul style="list-style-type: none"> - this is a pattern that Dave Jacke & Eric Toensmeier, author of Edible Forest Gardens, point out about efficient harvesting access - this way you are never stepping on the soil, minimizing compaction and maximizing soil fertility and yield - sometimes, 20" secondary paths are called for, particularly in annual veggie beds.
	Start your planting plan with the tall trees in mind; then work down	<ul style="list-style-type: none"> - ok, you're ready to think about trees now - know how tall and wide the tree gets; if you plan on pruning & shaping your fruit trees, decide how big you want them to get - once you get your biggest circles on your map, start putting smaller circles (shrubs, then herbs, etc..)

Phase	Tip	Details
	Create a sun-trap	- place tall trees on north side and get smaller as you move to the south; this will create a sun-trap
	Don't get caught standing still and over-designing. Choose plants you like and that you can realistically acquire for now.	<ul style="list-style-type: none"> - it's easy to get carried away with food forest design; besides, in the first few years, your main goal will be building soil and your main yield will be annuals like peas, potatoes, squash, pumpkins, etc.. - you'll be fine if all you have to start are these cover crops, a few comfrey plants and your favorite trees; you can fill in all the obscure herbs and shrubs later on by planting right into the chopped and dropped annual ground covers
	Add nitrogen fixing plants & dynamic accumulators	<ul style="list-style-type: none"> - gomis, autumn olive, seabuckthorns all fix nitrogen - use them when you can - comfrey, nettles, yarrow are all good at accumulating nutrients deeper than trees are often able to get them - use these plants, they are easy to propagate and find
	Add flowers	<ul style="list-style-type: none"> - not many flowers tend to show up on so-called permaculture plant lists - but they make food forests beautiful - add tulips, daffodils, whatever is around!
	Fall plant if you can	<ul style="list-style-type: none"> - if you can, fall (mid-September to mid November-ish) is a great time to plant for low-maintenance tree establishment - nature will irrigate your plants while they develop roots - early spring works well too - late spring and summer can work, but you will need to irrigate a lot during dry spells - my theory is, let the nurseries water your plants all summer in the shade <p>** This tip is mostly for West Coast North American food foresters where mild temperature and wet winters encourage low-maintenance root development</p>

Phase	Tip	Details
	Save space for some annuals	<ul style="list-style-type: none">- annual crops are not the devil; they can be very high value!- by and large we need to reduce our reliance on them for a better return on our energy investment, but they still have a significant role- besides the things I mentioned above, greens like mizuna, arugula and mustard are great for fresh salads all year long; what else can yield you around \$5 day every days of the year?- save some garden bed space for all the annual you would otherwise want to grow
	Try stuff!	<ul style="list-style-type: none">- eventually you gotta get off google and youtube, put down the books, and start making some decisions- don't let the books and the experts lead you to thinking that theres somehow <i>one perfect way</i> to establish a permaculture food forest- use your intuition, listen to nature and experiment

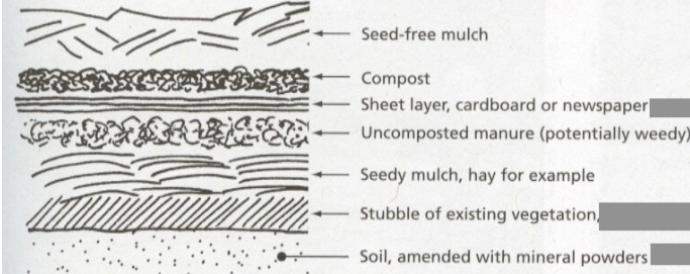
Phase	Tip	Details
Site Layout	Lay out stakes or flags	<ul style="list-style-type: none"> - this is very important; at the end of the day, this is where the design becomes a reality - sometimes, on tight budgets, this is really the only design work I've been able to do - I call it 'design-on-the-fly' - chances are you are not the only one installing this food forest; make it obvious where pathways are going and where beds are - I use 4' cedar stakes, laid horizontally on ground to demarcate these lines; it makes it easy to facilitate workers 

Phase	Tip	Details
	<p>Remember, plan for 3 ft pathways & 4 ft beds</p>	<ul style="list-style-type: none"> - this is a pattern that Dave Jacke, author of Edible Forest Gardens, points out about efficient harvesting access - this way you are never stepping on the soil, minimizing compaction and maximizing soil fertility and yield - secondary pathways where you do not need a wheelbarrow can be smaller (20" or so)  <p>This garden was 100% lawn just 1 month before this photo. It was done on July first, so we elected not to plant any trees and shrubs, just the cover crops listed above. Then, we came back in October, chopped and dropped and planted over 50 fruiting plant species. This method worked well!</p>
	<p>Involve all stakeholders</p>	<ul style="list-style-type: none"> - it is a good idea to include several of the key stakeholders in this process - make sure corners are not too sharp for people, make sure paths fit with the way people normally walk, etc..

Phase	Tip	Details
Site Preparation, Earthworks, Soil Building & Site Reclamation	Get rid of the grass!	<ul style="list-style-type: none"> - grass creates bacterially-dominated soils and your food forest wants fungal-dominated soil; get rid of the grass - if you're breaking / removing sod, place it upside-down in the bottom of raised bed or hugelkulturs to keep that nutrient on site - if you're sheet mulching, overlap cardboard at least 6"; try to use cardboard that doesn't have holes, stickers, plastic and staples.. - trench all grass edges  <p>** My good friend Jason Nyberg (a professional sheet mulcher) laying sheet mulch in a trench</p>

Phase	Tip	Details
	Shape the earth to your advantage	<ul style="list-style-type: none">- water harvesting earthworks require a lot of energy, be it a machine or human power on a mattock; but they are worth it in the long run- we can grow food in a much more water-wise way, but it takes energy up front- dig swales, water harvesting pathways, rain gardens, hugelkultur swales and ponds wherever it makes sense; even just small tree berms to catch runoff- if you're breaking sod without a machine, use a mattock before a shovel   <p>Hugelkultur swale being constructed. It's dug down on contour 20" deep and 4 feet wide and filled with rotting alder logs, kitchen scraps, sea soil and leaves. Then it was capped with a mix of native soil and sea soil and planted to a plum, cherry, an apple and strawberry ground cover. Leaf mulch was placed on top!</p>

Phase	Tip	Details
	Acquire lots of organic matter and cover disturbed soil with it	<ul style="list-style-type: none"> - it is possible to build food forests with nothing but cover crops and decaying plant matter over the years, but lets face it, we want to speed that up - we live on the west coast where organic matter is in surplus - If your replacing a lawn, I recommend anywhere from 5-40 yards of wood chips and 5-40 yards of leaf or wood compost for your average urban yard 
	Microclimates	<ul style="list-style-type: none"> - if you can afford it, bring in large rocks to create even more thermal mass and small little niches; they look nice too  <p>These rocks on the north-side of the pond will store direct & reflected sunlight, radiating heat (long-wave) at night to surrounding plants.</p>

Phase	Tip	Details
	Edging	<ul style="list-style-type: none"> - think about edging - it is very important in urban gardens that are still meant to be clean and beautiful - rocks work if theres no grass to get caught in it, raw timbers work well, bricks, driftwood whatever you can afford
	Layer the soil	<ul style="list-style-type: none"> - always try to end up with mulch on top, ammended soil underneath that and then subsoil beneath that - this is what worms and other soil organisms expect to see and they will come if its done right  <p>Source: Jacke & Toensmeier. Edible Forest Gardens. p 403</p>
	Farm microbes	<ul style="list-style-type: none"> - Your prime directive should be to farm beneficial soil microbes! Give them water and lots of organic matter - they'll garden for you! - I recommend "Teaming with Microbes" by Jeff Lowenfels, Wayne Lewis for more information

Phase	Tip	Details
	Use cover crops immediately after disturbing soil	<ul style="list-style-type: none"> - anytime you dig water harvesting swales, sunken pathways, tree wells, rain gardens, hugelkultur swales, etc., reclaim the site immediately by seeding cover crops! - if you don't, nature will, and she'll choose less useful species like buttercup - I like hairy vetch and field peas as annual nitrogen fixing repair plants, plus you get peas and the bees love the vetch! - also, plant potatos, squash and pumpkin the first year, they make great soil builders as things are just getting settled - I use West Coast Seeds for bulk field peas and vetch, but perhaps I'm missing a more local source 
Planting	Use Inoculants	<ul style="list-style-type: none"> - If you can get them, use pea inoculate on legumes and mycorrhizal fungi on all plants - In forests where native soils are in tact, this doesn't always help; but in urban spaces on disturbed lawn, it is a great idea and produces results! - Check out the Organic Gardener's Pantry for more info.
	Make sure not to dig too deep of a hole	<ul style="list-style-type: none"> - plants can be planted in shallow compact-bottom holes - spend more time on loosening soils 'around' the trees/shrubs instead of 'below'; the plants want to send roots 'out' more than 'down' - a common problem is the plant sinking down over time and then getting stem rot

Phase	Tip	Details
	Water everything very well	- all throughout the soil building process, water everything; your microbes need it
Maintenance	Irrigate	<ul style="list-style-type: none"> - don't listen to some of the rhetoric out there about food forest being completely hands-off - while this might be true after year 4 or 5, we need to ensure that they get established - it also might be true in some conditions (like in Saskatchewan with high summer rainfall, where we've very rarely irrigated the food forest there), but here in Victoria, with 13mm of July rain on average, you'll want to give your food forest a drink every once in a while to keep them alive
	Chop and drop	<ul style="list-style-type: none"> - for the first few years, your main activity will be chopping all the green manure crops so that they do not overtake your young seedlings - truthfully though, the trees and shrubs will enjoy a little shade through the heat of the summer, so only chop and drop selectively as needed - again, peas and squash make a great cover crop for soil building and weed suppression - reduce plant competition by eating them!
	Pruning	<ul style="list-style-type: none"> - pruning will be a common task that you'll have to engage in for maximum production and harvestability, especially in small spaces - I recommend Michael Phillips' book 'Holistic Orchard Management' for general maintenance issues
	Thinning & Harvesting	<ul style="list-style-type: none"> - thinning equals harvesting in a food forest because everything is edible - you are simply reducing plant competition by harvesting the peas that are starting to strangle your seedlings

The results:

Here is what it looks like after a lawn or grass patch is disturbed and reclaimed with a food forest. Remember, the photos below are after only one year! The trees and shrubs are tiny, but they will fill in the space from 20-30 feet tall to the ground. There are dozens of fruit trees, and dozens more shrubs and herbs in these photos. There are also thousands of

pea and vetch plants. They are all consciously designed to support one another fill into to become a dense, multi-story food production system.

**Before****After****Before****After**

And, in 5-12 years, they'll start to look like my friend's Geoff's yard - low maintenance, organic, multi-story food production! Beautifully productive!



Hope you've enjoyed these tips, there are surely more. Visit the [Hatchet & Seed](http://Hatchet&Seed) website to see more case-studies and portfolio pics.

If you would like help getting your food forest established, email us at:
hatchetnseed@gmail.com.