



Manual for creating a community Food Forest on public land

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“What you eat is the most political thing you do every day” – Jeanette Winterson

Introduction

Imagine a forest full of food, free to harvest for for everyone.

This manual will assist you with the process of getting access to public land and establishing a community Food Forest on it. A community Food Forest on public land is not a “one man” project, You need to be able to motivate other people in your community to actively support you.

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1. Get in touch with your local community association

[Community associations](#) are a very common tool for involving interested people in the local council decision making process. These associations might have names like "Ratepayers and residents association", "Development society", among others. You can usually find the contact data of your local community association on the Internet. For Queenstown Lakes District for example here: http://www.qldc.govt.nz/small_community_associations

There are many organizations like this all over New Zealand. If your community is so small that it hasn't a community association, then you probably don't need one.

Make a nice looking presentation of your project proposal.

Very important points that need to be included in your project proposal:

- STRESS that you will form a Charitable Trust that will pay for every expense of the project.
- STRESS that the Charitable Trust will be responsible for the maintenance of the future Food Forest.
- STRESS that the Charitable Trust will be permanent, and ongoing.
- STRESS that you only ask for their verbal support to start the project, nothing else!

Here is a [sample presentation](#) (from a more advanced stage of the project) of the Hawea Food Forest project. Take also a look at my [sample Prezi.com presentation](#). You should include the 4 minutes [Forest Garden Intro Video](#) from Martin Crawford in your presentation. It is a very good summary of a Food Forest, filmed in an actual established Food Forest.

Make good looking handouts for them. See my [sample handout](#) (a paper has two sides, use both!). This enables them to look at your project proposal at home. They can also show it to partners and friends and discuss it.

Don't scare them with a horrible future vision of a world without cheap oil! Be positive.

Learn enough about [Food Forests](#) in general, in particular the amount of [maintenance needed on a Food Forest](#), so you can answer all upcoming questions. Don't bury them with details, offer details only on request. Ask for a few minutes of their time for your proposal/presentation at the next meeting of the community association board.

Give them one week of internal discussion before you ask a member of the board about their opinion according to your project proposal.

It is not impossible to proceed without the support of the local community association, but you would need to be able to prove to the local council a level of public awareness, interest and participation.

Checklist for the Community association

- [] Enough knowledge of Food Forests in general, in particular the amount of needed maintenance, to be able to answer all (at least most) of the possible upcoming questions.
- [] Nice looking presentation of your project proposal
- [] Good looking handouts

2. Form a Charitable Trust

You need a governing body to get a license for public land.

Use the "society based incorporated trust" See here: www.societies.govt.nz. The "society based incorporated trust" was carefully chosen after reading through all the pros and cons of all other types of charitable trusts. It is the best matching trust type for such a project.

You need 5 trustees for the society based incorporated trust. No matter what the community association board has decided about the support of your project, it is still a good idea to have members of the community association in your trust.

Choose your 5 trustees well, you will depend on them for a long time.

You can't be one of the trustees if you want to employ yourself as the Manager of the Food Forest.

A paid Food Forest Manager is strongly recommended to carry your project fast forward.

You need to make a deed. Here is the [sample deed](#), which has proven to work for a Food Forest charitable trust.

- You only need to change: dates, PARTIES, name "Hawea Food Forest" and address - nothing else. Don't change anything more unless you are fully aware of all the consequences of the change.
- You need to fill the **CT2 form** from the Companies office <http://www.societies.govt.nz/> to register the trust.
- **You need a Justice of the Peace** to fulfill the CT2 form. Ask the community association for a local Justice of the Peace who may service you free of charge. A trustee need to sign at the bottom of page 3 of the CT2 form: "AND I make this solemn..." in attendance of the Justice of the Peace.
- See the [sample folder](#) for already correctly filled sample CT2 forms.
- Make scans of the documents. (setting up a Google Mail/Docs account to share this is a good idea)
- File the filled and signed CT2 form and a signed copy of the trust deed ASAP to the Companies office.

Possible contacts at the Companies office to follow up with:

- Mr. Shane Christoffersen <Shane.Christoffersen@business.govt.nz> Ph. +6439622683

- Mrs. Helena Aperila <helena.aperila@companies.govt.nz> Ph. +6499134215

Don't wait until the registration is complete. You can proceed with some things at the same time.

Ask the IRD for a tax number.

- Use the IR 596 form for that. (correctly filled sample forms are in the [sample folder](#))
Note that the IRD insist to know the personal IRD no. of all trustees. (complain to them please)
- Make a scan of the document.
- File the filled and signed form ASAP to the IRD.

Register the trust at the Charities Commission.

You need to do this for funding of the project.

Every funding organisation will ask you for your Charities Commission registration number. The trust will get Donee Organisation status if this is done. A sample completed form is also in the sample folder above.

If the Charities Commission tell you that they have a huge back queue and need many months for finishing your registration, then don't hesitate to write to the IRD and ask them directly for a "statement of Donee Organisation status" and a "statement for income tax exemption".

See the sample letter in the sample forms folder.

Open a bank account for the charitable trust.

You need a bank account for the funding of the project.

I used Kiwibank. I can't tell you anything about any other bank.

If you want use Kiwibank, ask Alesha Blair (Business Support Specialist)

<Alesha.Blair@kiwibank.co.nz> Ph. +6432135080 for details.

Using www.xero.com enables total transparency of the fiscal management (Use the Pricing plan: Small). They give a discount for charitable trusts. Recommended for larger projects.

Ask the IRD for exemption from resident withholding tax.

This saves you from arguing with the bank about the resident withholding tax.

- Use the IR 451 form for that. (correctly filled sample form in the sample forms folder)
- Make a scan of the document.
- File the filled and signed form ASAP to the IRD.
- Show the statement of the IRD the bank.

Checklist for the charitable trust

[] Trust registered at the Companies office.

[] Trust registered at the Charities Commission.

[] IRD number received.

[] Bank account working.

[] Donee Organisation status granted.

[] Income tax exemption granted.

[] Exemption from resident withholding tax granted.

3. Funding

Possible sources of funding are:

- The local gambling money redistribution organisation. I.e. www.pubcharity.org.nz or www.lionfoundation.org.nz
- Lottery Community grant (\$30,000 minimum) <http://www.communitymatters.govt.nz/Funding-and-grants---Lottery-grants---Lottery-Community>
- **Your local funding sources. Do research to find them. Ask the local community association.**
- www.pledgeme.co.nz - **we used this.** <https://www.pledgeme.co.nz/569> This gave us the funds needed for buying some plants.
- Donations – Private and commercial. Offer donors a [donation receipt for tax deduction](#).
- Sponsorship.

Make a budget plan. Here is a [example budget plan](#).

Attention: When you apply for a grant, not all funding sources fund all kind of expenditure. Some of them for example don't pay a salary for a Manager. You have to read through all the fine print.

The grant organisations usually want you to fill a form with detailed information about the usage of the funding. Document the usage of the money thoroughly. Grant organisations will likely ask you to prove how the grant money has been used.

Here is our successful [sample PledgeMe campaign](#) with this [PledgeMe presentation \(HD\) Video](#).

Invest enough time and effort to produce a good presentation for your campaign. (for us, 6+ hours)

- Include links to in detail information regarding your PledgeMe campaign.

- TRIPLE check your content spelling! Facebook will cache the PledgeMe content for days.

Checklist for funding

[] Charitable trust set up done.

[] Bank account set up done.

[] Budget plan done.

[] Sought advice from the local community association for local funding options.

[] Researching of local funding options done.

(I'm interested in more examples of success funding, please tell me in detail about **your** successful funding)

4. Choose an area of public land that is managed by the local council

The right choice of public land is vital to the project.

A Food Forest is a long term project, taking 10-20 years to reach peak productivity and usually existing way beyond the lifespan of any individual or initiating group. Because of this, it needs to be protected and immune from short term interests such as fast money earnings from grazing leases, farming leases, complete clearings for firewood or sale for settlements.

Well chosen public land is the best place for a Food Forest. Public land, in contrast to private land, is not usually affected by ownership change or changes of policy that follows a change of ownership (eg to an heir).

The future Food Forest area should not be in middle of the town. The Food Forest could not grow enough in the middle of the town if there is a high demand for more Food Forest area. It should also not be too far away from the town border, so people can reaching the Food Forest with a bike. I propose a maximum of 20 km from the town border.

The ideal place of a Food Forest would be:

- Not in the direction of planned grow of settlement or other development (ask the local council for the community development plan)
- Enough space to grow in the future. (Think about 10-50 ha)
- Not more than 20 km away from the target community.
- A street not far away from the area.
- Formerly farmed land without grass on it.
- A [wind shelter belt](#) already established.

I assume that not many people have a piece of land in their community that meet all criteria.

The criterias are sorted by importance, the most important on top.

The initial Food Forest lease area size is also very important. It must between 700 m² and 9999 m² (99m x 100m). If the initial size is smaller, a Food Forest cluster can't be completely implemented. If the initial size is larger, the local council can't issue a lease for the area for \$1 per year.

The local community association should be able to assist with this process.

Checklist for choosing land for the future Food Forest

[] Advice sought from the local community association in choosing the land.

[] The public land is managed by the local council.

[] Review of the community development plan according to the land done.

[] Research of former land usage done to avoid land loaded with poison or other unpleasant surprises.

5. Make a 50 year plan for the future Food Forest area

The local Councils like to see a 50 year plan, with visions and evidence of implementation planning. Some stakeholders may also like to see your plans. But you assess which stakeholders need know which details about your long term plans.

You don't need to put much details in your plan. A graphical plan of possible future development of the area together with **a vision of the future** of the Food Forest and the reassurance that the charitable trust will care about the area in the future is adequate. See my [sample 50 year plan](#).

I recommend www.scribus.net for graphical plans. Many [Scribus templates](#) available on request for free.

Checklist for the 50 year plan

- Graphical plan with your future plans done.
- Your vision of the Food Forest future articulated in the plan.
- Stressed that the charitable trust will care about the area in the future.

6. All stakeholders need to at least tolerate the Food Forest project

Nobody likes problems coming from a new project. **It is your job to assure all stakeholders that the Food Forest is no threat or inconvenience to them.**

Prepare nice handouts (could be the same that you made already for the community association) and visit them at home. When meeting stakeholders, have two people present from the Food Forest project, as this makes it hard to dispute any agreements you might make. Women usually have superior social skills. If you have a smart woman in your Trust (you should...), ask her to be part of the visiting party. Stress how a stakeholder might benefit most from the Food Forest. **Document carefully in writing every agreement with every stakeholder.**

Checklist for the stakeholder

- Advice sought from the local community association who is stakeholder of the future Food Forest.
- All direct neighbors of the land visited and asked who else is stakeholder of the future Food Forest.
- All stakeholders visited and talked and spoken with about the future Food Forest.
- All agreements with all stakeholders documented.

7. Propose the project to the local council

Ask the local community association about the most open-minded member of the local council and make an appointment for a (good) personal presentation of your project with him/her. Be well prepared. Take no more than 15 minutes of their time. Ask only for their consideration of your proposal. Leave them with some handouts. This starts the internal discussion about the project within the Council.

Checklist for the proposal to the local council

- Sought advice from the local community association in who is the most open-minded member of the local council.
- Nice looking presentation of your project proposal
- Good looking handouts

8. The Food Forest project needs the attention of the public

You will need to prove public awareness, interest and involvement in your project.

If you can do this, the council can't refuse you access to public land for your project. At the end, the council has to act in the interest and the benefit of, their community.

Produce a nice looking flyer with all essential information of your project first. See our [sample flyer](#). You can place this flyer on all sorts of notice boards (physical and online) and give it to interested people.

Set up a social media website. [Facebook](#) or if you have a facebook allergy, a [Google Site](#) or a [Wordpress](#) site should do the job. A self made website is of course also OK but this would involve the most effort.

You need the website statistics

Count every participant of public presentations of your project.

Create a opportunity for provable engagement of the community.

I set up a wind shelterbelt tree seed distribution system. I asked people to raise [trees](#) from [seed](#) for the project. People had to [leave an email address or phone nr](#) to receive the free seeds (raise one for us, keep one for yourself). This way I could **prove** how many people were **actively supporting** the project. Don't worry too much about a low number of people. 30 proven active supporters in a 5,000 person town is MUCH more the most other community projects can point to.

See my [sample email with proof of public awareness, interest and involvement](#).

Again, support from the local community association make things easier. Ask them about open minded Journalists in local newspaper office. If you're lucky like we in Wanaka / Hawea, local Journalists come to you and ask you for an interview for an article in the local newspaper. If you're less lucky, **write a newspaper article** and offer the article a local Journalist for free. Make clear that you are fine with publishing the article in the name of the Journalist. A nice free article about a beneficial community project is very hard to reject. See the sample article of the [Wanaka Sun](#) and the [Otago Daily News](#).

Checklist for publics attention

[] Nice looking flyer to present your project done.

[] A social media page or a website set up done.

[] A opportunity for provable engagement of the community created.

[] Sought advice from the local community association to find the most open-minded local Journalists.

[] Article about the project in a local newspaper published.

(I'm interested in more examples of successful engagement of community, please tell me in detail about your successful ideas.)

9. Ask the local Council for a final decision

ALL points, except the funding, need to be done before you ask the council for a final decision about your local Food Forest project on public land.

Provide the Council with printed copy of:

- Your project proposal. (stress that the Charitable Trust is responsible for maintenance)
- The documentation showing support, or at least tolerance, from all stakeholders
- Your 50-year plan
- [Proof of public awareness, interest and involvement](#)

If all points are done, it is very likely you will get the licence for the public land granted.

You **ask the council for a long term "LICENCE TO OCCUPY"** for the land you have identified for the Food Forest. It could happen that you only get a 5 years licence period with undertaking for more after checking your intentions/credentials. That's OK as long you get commitment for 25+ years after your "probationary period".

You also ask the council for an exemption from the set up fees. This is important, otherwise they try to charge you a little fortune for the set up fees.

Checklist for asking the council for a final decision

- [] A well formulated project proposal included in the application.
- [] Documentation about the support or at least tolerance of all stakeholders included in the application.
- [] The 50-year plan included in the application.
- [] Documentation about the public awareness, interest and involvement in the application.
- [] Application for a licence to occupy for \$1 annually (free of setup fees).

10. The licence

Check your licence draft carefully!

These licences are usually made by lawyers with no experience of creating a licence for a beneficial community project. The first draft will very likely come directly from a copy of a license for a farmer and will be full of unnecessary and impeding rules. You need to negotiate until all unnecessary and impeding regulations like i.e. no signs on the land, or no storage of any kind of tools are removed.

DON'T sign a stupid licence!

Checklist for the licence

- [] No unnecessary and impeding regulations in the licence. E.G. 'no signs on the land', or 'no storage of any kind of tools'.

11. Choosing plants for the Food Forest

Choosing the right plants from the beginning saves you a lot of time and effort. The key for success is a deep knowledge of the site conditions.

The measurable site conditions are:

- The annual rainfall and the distribution of that rainfall over the year.
- The usual lowest temperature of the year.
- The annual [heat growing degrees](#) and [winter chilling hours](#) for the site.
- The usually maximum wind speed
- Additional salt in the air ?
- Soil structure, depth and PH
- Soil fertility and soil life.

Some conditions are easy influenceable, while others can be hard to be influence and some are not influenceable at all.

Not influenceable is salt in the air. Hard to be influence are the heat growing degrees, winter chilling hours, minimum temperature and often also the available water.

Easy to influence are wind speed, soil structure and PH. The soil depth is influenceable but this takes more time and effort.

You always need to measure your site conditions yourself. The absolute minimum is a high/low thermometer and a precipitation gauge, unless you are very lucky and have a public weather station really near by.

If your budget permits it, it's recommended, that you get a solar powered weather station which measures and stores weather data for a long time. It should be computer readable. This enable you to accurately identify the highest possible plant diversity within the limits imposed by your site conditions.

The next best (low cost) measurement device is a USB-Temperature logger.

I use [this model](#) successfully: Search www.ebay.com.au for "High Accuracy USB Temperature Data logger Datalogger Temp Recorder LCD Display". Approx. \$32 AUD. You need to placed your temperature measurement device in the same Height (above ground) as the [sensor](#) of the [nearest local public weather station](#). It needs also be [protected from direct sun and rain](#).

A example for Hawea Flat, Otago, South Island, New Zealand.

Some [sample climate and soil data from Hawea Flat](#).

These data are from a Otago database. But since I discovered up to 100% difference to self measured data, I doubt the accuracy of this database. (I'm interested in more examples of good databases, please tell me in detail about a database for your area)

The most limiting data (without doubt) for Hawea Flat are the very low rainfall in dry summers and the short frost free period. These are the main factors for choosing plants.

Plants for Hawea Flat have to be:

- drought resistant
- non demanding with respect to heat growing degrees

Look now in the New Zealand [Koppen classification worldmap](#) and the Mediterranean [Koppen classification worldmap](#). I created a [combined map of both classifications](#).

The interesting areas are the overlapping areas. These areas have the most similarity to the Hawea Flat dry summers climate with lower heat growing degrees.

I'm looking now for useful canopy type trees.

Which useful canopy type trees have an origin or at least thrive in the combined map areas ?

- Sweet Chestnut (*Castanea sativa*) i.e. Italy, Spain, France and available in NZ.
- Holm Oak (*Quercus ilex* subsp. *rotundifolia*) i.e. Italy, Spain and also available in NZ.
- Shagbark Hickory (*Carya ovata*) i.e. U.S./Canada west coast but **not available** in NZ.
- Sugar Maple (*Acer saccharum*) i.e. U.S./Canada west coast and also available in NZ.
But Sugar Maple is [known](#) for its relative high water needs, so only partially suitable.

You get the idea ? (I'm available as a (usually paid) consultant :-))

Do the same for your climate conditions.

Produce a similar [plant wiki](#) for the plants of your Food Forest. (You can use the sustainable-practice.org website)

I strongly recommend [Martin Crawford's](#) "Creating a Forest Garden" and "How to Grow Perennial Vegetables" books for good Food Forest species choices. Samples of the books are [here](#) and [here](#). I can't adequately cover the content of a 380 pages book in this manual. **You need to read these kinds of books.**

Buy plants if possible from local grown sources. You support your local economy and locally grown plants are already perfect adapted to your area. Use plants on its own roots, if you can get them. They are clearly preferred for a Food Forest. They grow usually more vigorous than a grafted plant and recover faster from coppicing or damage.

I recommend a 'whitelist' policy for the canopy and understory trees as well as for the shrubs, bushes and climber. That means only you choose the species and varieties based on your site condition analyses, as documented (whitelisted) in your plant wiki. What's not in the plant wiki doesn't go in the Food Forest. But ask people for plant suggestions !

I also recommend a blacklist policy for the herb layer, ground cover layer, and root/tuber layer. As long a plant choice is not against common sense (not rampant or useless stuff) let people experiment with it. Ask the old local garden geeks for bad choices and put these on the blacklist.

Checklist for choosing plants for the Food Forest

- [] All relevant climate data gathered for your area from local databases and niwa.co.nz.
- [] Facilities to measure real site climate conditions setup done.
- [] A recommended Food Forest book read.
- [] If your local climate is considerably divergent from the average NZ climate, a combined Koppen classification map has been created and referenced.
- [] As much as possible, each species has been looked up for every Food Forest layer.
- [] A plant wiki created with the found species and varieties.

12. Ground preparation of the Food Forest area

Careful ground preparation is a very important element of my method of establishing a Food Forest in stackable clusters.

We want to achieve a high diversity of suitable ground cover species.

- A thick layer of ground cover plants that are:
 - Not grass. **Grass is useless in a Food Forest, it impedes all other layers.**
 - Dense enough to suppress germination and growth of weed seeds.
 - Not going to grow not too high. The herb and the root crop layer needs light too.
 - Going to offer as many additional uses as possible. Something like fixing nitrogen, edible, bee attracting, etc.
 - Can still thrive with light pedestrian traffic.

If you have already a low (max. 20cm) growing ground cover on your first future Food Forest cluster that fulfills these specifications, you can consider yourself very lucky. Skip this chapter and go on with [Planting plants on the Food Forest area](#).

For most of us:

YOU NEED TO GET COMPLETELY RID OF THE GRASS before you can even think about seeding ground cover species seeding.

First step: mow the future Food Forest area as short as possible.

Here are some options for removing the Prairie.

- Mechanically remove the grass with heavy farmer gear:
 - 1st step: use a plow that turns the upper layer of the soil over. 15-35 cm depending on what is now growing and how deep your topsoil is. Don't put your subsoil on the top.
 - 2nd step: use a rotary harrow (or similar) to break up the soil into smaller particles.
 - 3rd step: (optional) use a seed spreader for your ground cover seed.

Pro:

- High success rate in removing 100% of grass and all other stuff without need of after work.
- Very fast.

Con:

- Need a lot of space around the actually Food Forest area for use of the gear.
- Easy to produce collateral damage because of the rough and heavy gear.
e.g. deep tracks in the ground if done on soft ground
- Cost approx. \$200 per running hour rent for the gear. (estimated 1-2 hour per 700m² need)

- Mechanically remove the grass with a rotary hoe:

Wait with the removal until the weather service <http://www.metservice.com> predict 10 or more days in a row with sun and no rain.

That way 90% of the remaining grass stalks die from lack of water and you have only to care for 10% of them. If you do not take care of the rest of the grass stalks, then they will sooner or later take over your Food Forest area. The "care" for the rest of the grass stalks could be:

- Pull them with the roots out.
- Selectively poison them with 20% acetic acid vinegar spray.
This needs to be done very, very carefully or the ground around the grass stalk will get temporarily infertile, and the following ground cover seed may not grow on it.
- Selectively burn them with a gas fire weeder.
Not tried that, but it should work.

Pro:

- Collateral damage unlikely.
- \$50-\$150 rent per day for a good walk-behind rotary hoe. (more strongly and wider, the better)
- \$80-\$100 per hour for a lightweight mini tractor with a tractor rotary hoe. (recommended)
Estimated 1-2 hour per 700m² with a tractor rotary hoe

Con:

- Remove only 99% of the grass.
The last 1% grass stalks will remain with disconnected roots in the upper layer of the soil.
- 700 m² took approx. 1-2 days with a good walk-behind-rotary hoe.

- Remove the grass with a chicken tractor.

The recommended chicken density for removing grass is 12 high active chicken per 100m²

Pro:

- Collateral damage very unlikely.
- Go easy on the soil but thoroughly remove everything including weed seed.
- Supply of chicken manure (soil improvement).

Con:

- Slow. Will take many weeks.
- 84 chickens for 700m²
- Need infrastructure: fresh drinking water, (electric) fencing (100m) and a small amount of food need to be provided.
- Need daily care for several weeks. (collecting eggs, feeding and looking for the chickens)

- Kill the grass by removal of light.

Using a decomposing layer is clear preferred because it doesn't need removal.

<http://www.ecocover.com/> sell a degradable EcoCover Mulch Mat. It look promising (not tested). You may seed directly on the decomposed weed mat layer after it is enough broken down. Another option is [sheet mulching](#) the area. But this is [quite challenging for 700m²](#)

Pro:

- No collateral damage.
- Inexpensive.
- In case of sheet mulching, intense soil improvement.

Con:

- Very slow. Will take many months.

- Chemically remove the grass with 20% acetic acid vinegar spray. I never used this option. It may work quite good or not at all. I can't really recommend it.

Pro:

- Collateral damage unlikely.
- No extra space around the actually Food Forest area needed.

Con:

- The area get infertile for an unknown time. The following ground cover seed could not grow in it until it's recovered.
- Not clear what are the other implications for the soil live.

- Chemically remove the grass with Herbicides. (Roundup and their like).

Pro: - Fast, Inexpensive.

Con: - Near complete death of the soil life.

You will get infertile soil for a long time and [carcinogens](#) in your food chain.

Don't do this !

So my recommendations are:

If you looking for fast results and have the space and the money, use the heavy farmer gear.

If you don't have the space and/or the money use a rotary hoe at the **right time**.

If you have time and some money use the chicken tractor.

If you have time but no money use a low (no) cost light removal layer.

(I'm very interested in your experience with removal of grass, please tell me in detail)

What ground cover species ?

You should start with one or more species covering the entire area completely and densely.

[White Clover](#) (*Trifolium repens*), sown very dense (70 gr. / m²), is a safe choice as starter for almost every area of New Zealand.

If you seed White Clover at this very high density you will end up with a dense [carpet of clover](#).

White Clover suppress the germination of weed seeds. It fixes nitrogen (you need to use inoculated seeds if your land was never ever before inoculated with clover supporting bacteria). White Clover is not competing with woody plants and easy to remove for test plantings of other ground cover or (when ready) the establishment of herb layer plants.

I used a mix of four of the most drought resistant White Clover varieties ('Haifa', 'Kopu II', 'Tahora', 'Demand') available in New Zealand for the Hawea Flat project.

White Clover may not be ideal as a long term ground cover in a Food Forest, but it buys you time to **find out what works best for you and your site conditions**.

Other Clover species worth trialling:

[Caucasian Clover](#) (*Trifolium ambiguum*) - grows up to 45 cm high, is slow to establish but has a strong and deep (>30cm) root system. On trial as a barrier plant at the Hawea Flat Food Forest.

[Strawberry Clover](#) (*Trifolium fragiferum*) - grows up to 16 cm high. Has a strong and deep (up to 25 cm) root system. On trial as a barrier plant at the Hawea Flat

Food Forest.

[Subterranean Clover](#) (*Trifolium subterraneum*) (annual species) Also on trial as a barrier plant at the Hawea Flat Food Forest.

Some suppliers for ground cover: Andrew Winchester <ajw_at_homebrook@hotmail.com> ('Huia' White Clover / 25 kg bags), www.specseed.co.nz, www.wesco.co.nz, <http://www.nomow.co.nz/plants.html>

Checklist for ground preparation of the Food Forest

- [] Done research into useful ground cover species and varieties that will thrive without help.
- [] Grass and other stuff completely and thoroughly removed.
- [] New ground cover seeded.
- [] New ground cover large enough to take light pedestrian traffic.

13. Planting plants on the Food Forest area

Make a cluster plant plan. See [my example](#).

The canopy trees go to the south end of the cluster (Southern Hemisphere).

The understory trees in front of them and the bushes and shrubs in front and around the understory trees. Then finally all other plants were ever there is enough light. Plants that need close monitoring (i.e. running bamboo) near the path that leads through the cluster. **You can plant everything at the same time.**

Make research about the final size of all species and varieties.

Always position each plant with it's final (mature) size in mind.

My cluster plant plan includes only the productive plants. You need more plants for a functioning Food Forest. You need additional:

- Plants that fix nitrogen. If possible species in every layer. Ideally plants that are also productive like for example Goumi (*Elaeagnus multiflora*) or perennial Runner Beans (*Phaseolus coccineus*).
- Plants attracting beneficial predator and pollinator insects. Namely the plants of the Apiaceae family (i.e. anise, caraway, carrot, chervil, coriander, cumin, dill, fennel, parsley, parsnip), the Asteraceae family (i.e. marigold, calendula, coneflowers, various daisies, dahlias, and heleniums) and the Lamiaceae family (i.e. basil, mint, rosemary, sage, savory, marjoram, oregano, hyssop, thyme, lavender, and perilla). Perennials preferred.
- Plants in the dynamic nutrient accumulator class. Comfrey (*Symphytum officinale*) is prime example of this class of plants. But there are more like Dandelion (*Taraxacum officinale*) or Bracken (*Pteridium aquilinum*).

The most attractive plants are productive plants with additional characteristics and functions.

Fennel (*Foeniculum vulgare*) is a prime example. Fennel is edible, attract beneficial insects and accumulate nutrients. Or Chickweed (*Stellaria media*) edible and also attracting beneficial insects.

Mark all woody plant positions with solid labeled stakes in the cluster.

This will enable people, even without seeing the plan, to help you with planting.

Use very long lasting [aluminium plant labels](#) ([picture](#)) on every woody plant!

I assume you start with one Food Forest cluster. That is just 7-8 trees. That is not much. You should invest time and labour to give them the best possible start.

The following instructions are for giving your trees / bushes the best possible start.

Make a PH analysis of your soil. Soil PH analysis kits are available in every well stocked garden centre.

Example: Peach (*Prunus persica* 'Sweet Perfection')

For the species, or the rootstock if grafted, that you wish to plant, look up the preferred soil conditions at www.practicalplants.org :

“Requires a well-drained moisture retentive soil. Thrives in a loamy soil, doing well on limestone. Best not grown in acid soils. Prefers some chalk in the soil but it is apt to become chlorotic if too much is present. Prefers a pH in the range 6 to 7”

If your soil PH is under 6 you should help this species with adjustment of the soil PH.

Don't worry, a Food Forest will adjust the soil PH to a optimum by itself, the help is just for the first years.

I recommend the use of fine grade Crushed Oyster Shell Grit if you need/want to **raise the PH** of your soil for some years. Add 250gr - 750gr fine grade Crushed Oyster Shell Grit to your planting soil.

If your soil PH is above 7 you should help this species with adjustment of the soil PH.

I recommend the use of fine saw dust (of course from untreated wood) to **lower the PH** of your soil for some years. Add 10% - 20% fine saw dust to your planting soil.

Add also 1 spoon of fine ground white chalk like recommended for *Prunus persica* to your planting soil.

I also recommend adding the following additives:

1 spoon of [Rok Solid](#), a mineral rich rock dust, containing more than 63 minerals.

[Superzyme inoculant](#), mycorrhizal fungi ([Trichoderma koningii](#) & [Trichoderma harzianum](#)) and beneficial bacteria ([Bacillus subtilis](#) & [Pseudomonas putida](#)) (please share/resell the rest of the 1 kg package).

Prepare inoculant:

Mix a half full bucket of [Superzyme inoculant](#) solution according to the information and directions for use (solution needs a 4-8h rest period) with chlorine free water (let chlorine water sit for 24h - 48h in the sun to get the chlorine out of the water before you continue).

If your soil is hard (not loose and friable), **dig a square hole** (the corners will catch the roots) double the size and double the depth of the nursery container of your plant.

However I recommend a minimum planting hole size of 50cm x 50cm x 50cm for trees.

I recommend you to put the excavated soil on heavy duty plastic foil beside the planting hole.

That simplifies the processing of the soil. Remove all larger stones and other larger stuff from the soil.

If your soil is very low in organic matter, add some good planting soil, not compost. Maximum 50%.

Mix all soundly.

Fill the planting hole up to 80% up with the prepared planting soil mix.

Remove the plant out of the nursery pot and put it for 15-30 minutes in the bucket with the prepared Superzyme inoculant.

Remove the plant out of the inoculant.

Carefully remove 50% of the soil around the root ball without breaking roots. It is important that you do this. It promotes a fast and healthy establishment of the plant.

Adjust the amount of soil in the planting hole before you finally put the plant in the hole so that the start of the plant root ball is at the same level as the border of your hole - then it will be the right height when you finish.

Put soil carefully around the root ball until completely covered.

Use a watering can with chlorine-free water (you don't want to kill the bacteria and fungi) and start watering the plant with a few litres of water.

The soil should sink and compact a little when you finish so the rest of the soil should fit in the hole.

The plant should be at the exact same depth in the soil as it was in the nursery pot.

Add some more chlorine-free water until the soil is saturated.

If you have not counted a minimum of 10 [earthworms](#) in your excavated soil, add 10 earthworms. Not compost worms, because these are different species that live in a different soil layer and feed from other things than subsoil dweller earthworms. You want [endogeic and anecic earthworms](#).

Hammer 2-4 Y metal (Waratah) fence posts outside the planting hole in the ground and **tie up the plant** to the fence posts with a broad (10mm) cocos, hemp or sisal string. **Don't use plastic strings.** **Put a protection against mulch and animals around the stem.** As high as possible. A 110 mm diameter black HDPE corrugated drainage tube (slit up its length) has proven to work well. Careful with mounting the slit drainage tube, don't damage the tree bark. Don't try to open the tube along its length to fit over the stem of the tree, but rather push one edge of the slit under the other edge of the slit in order to slide the stem of the tree in through the slit. The job of mounting of the slit drainage tube is best done with two people.

Add a 1.5m - 2.5m diameter layer of [good organic mulch](#), 20-35 cm high around the plant.

The best mulch for this propose is 1-year old wood chips with leafy material (ie mulched shrubs and small trees).

If your wood chip mulch is fresh, mix 3% - 5% horse or sheep manure to the mulch to compensate for the initial consumption of nitrogen while decomposing.

Water the much till saturated with chlorine free water.

I recommend you to also put a little bit of wood chip mulch around each **freshly planted small plant**. Or a small amount of a very different kind of soil i.e. very fine sand, or [bentonite](#) if you have a sandy soil. Also good is some fine grade pumice on top, around your new planted small herb layer, ground cover or root crop plant. The goal is to [mark them](#) **clearly as non-weed** til they're grown up. This should prevent them being mistaken and "weeded" by the less informed weeder.

Checklist for planting plants on the Food Forest area

- [] Plant plan done.
- [] All woody plant positions with solid labeled stakes marked.
- [] All woody plants with much care planted, tied, protected and labeled.

14. Maintenance of the Food Forest area

The primary maintenance in the first years is weeding.

Don't let any unwanted species in your Food Forest go to seed.

If you don't do anything else, cut the flower heads of the weeds species you don't want see spread in your Food Forest.

Don't bother to prune your fruit trees by yourself. Tell the people who harvest the most of a fruit tree that they get more fruits next year if they prune the tree a little bit. They will likely do the pruning - even if they need to be instructed in the basics first.

Don't start with more clusters at the same time you can properly maintain in the following years.

The Permaculture Institute of Australia has done some [research on maintenance on Food Forests](#).

It's a good idea to set up a repeating Google calendar event. That reminds people in charge to look for the Food Forest. You can invite all people that qualify for maintenance and see who is going.

Checklist for maintenance of the Food Forest area

- [] Look for the Food Forest every 7-14 days (depending on your growing conditions) in summer.
- [] Look for the Food Forest every month in winter.

15. Documentation of your Food Forest

Please document your Food Forest.

You will help other people greatly with good documentation of your process of getting a licence for public land and how you managed funding.

Please also document your site conditions and your plant choices. What worked, what didn't and why? I'm especially interested in the [heat growing degrees](#) of your area and the heat growing degrees of the species and varieties in your Food Forest.

Heat Growing Degrees and Chilling Hours

What are Heat Growing Degrees? In simple terms it is a total number of 'degrees of heat' that is needed before the fruit of any given plant will ripen. The formula for how it is calculated can be found on the [Hawea Domain Climate and Soil](#) document. Once you know the Heat Growing Degrees for a given plant, and if you are recording the Heat Growing Degrees of a particular site, you will be able to predict with some accuracy when that plant's fruit will ripen. A similar term (Growing Degree Days - GDD) can be found discussed in various places on the web, but it is limited and inaccurate for all but a few Northern Hemisphere locations.

There is no place you can look up this information (right now). A humble start is my [heat growing degrees table](#).

Heat growing degrees of your area and your species and varieties is a very valuable information.

I know e.g. the heat growing degrees that the Kiwiberry (*Actinidia arguta* 'Ambrosia Grande') needs to fully ripen the Kiwiberry fruits. 1080°C. This enables me to forecast that the fruits of this Kiwiberry variety will not ripen every year in Central Otago with its annual average of [908°C heat growing degrees](#). It will fully ripen only in warm summers. This also enables you to forecast the ripening date some days in advance. It is very handy to be prepared for large volumes of a specific crop.

Determining the heat growing degrees of a crop is very easy. You just note the day it is fully ripe and look up the heat growing degrees for that day later. Here is [my heat growing degrees spreadsheet](#) for Hawea Domain to make it easy to calculate your own numbers for the area and the crop.

We also need to introduce the concept of "**Chilling hours**" for warmer climates. Many species and varieties need Chilling hours to develop flower and leaf buds. This is no issue in Otago, as Wanaka/Hawea has 1701h - 1800h Chilling hours. That's enough for even the most demanding Apple varieties. See my [winter chilling hours paper](#) for the exact formula and some sample numbers.

(I would appreciate a chilling hours calc spreadsheet for USB-datalogger raw data)

Other missing but very valuable information is the exact amount of food you get out of your Food Forest in kilograms per square metre annually. This would help when calculating the Food Forest size needed for a given community.

Thank you.

Andy Cambeis

P.S.

The Hawea Food Forest Charitable Trust is urgently seeking more funding.
Any amount would help (donors can receive a donation receipt for tax deduction).

NZ: **Kiwibank account number: 38 9012 0893863 00**
 Subject: Donation Your Name
International: [PayPal.com](https://www.paypal.com): food.forest@haweacommunity.co.nz

NZ public Food Forest projects:

Auckland / Waiheke - started 1.1.2013 - confirmed activ - James Samuel <jmsinnz@gmail.com>

Auckland / Albany - expression of interest - Justin Ryan Scott <social@justinryanscott.com>

Canterbury / Christchurch - expression of interest - Geoff Ford <attitudenz@gmail.com>

Worldwide public Food Forest projects:

Europe / Croatia / Zagreb - expression of interest - Cvijeta Biscevic <cv.bischevich@gmail.com>

North America / USA / WA / Seattle - beaconfoodforest.org - <foodforestvolunteer@gmail.com>

Acknowledgement

Many thanks to people who have helped me with this manual.

Steve Henry for “connecting the dots” and explaining how local government works in New Zealand.

Joanne Conroy for support and explaining how local public land management works.

James Samuel for help in finding the right words and proofreading.

Raleigh Latham for feedback and proofreading.

[Joanna Pearsall and Bryan Innes](#) for making it possible in the first place.