



# SIMPLY EDIBLE GARDENS!



USING ORGANIC  
METHODS FOR  
PRETTY + PRODUCTIVE  
GARDENS!



GET YOUR GARDEN  
LOOKING GREAT  
AND SAVE ON FRESH  
HERBS, FRUIT + VEG!



**Do it Yourself Courses.**



## Simply Edible Gardens.

ORGANIC GARDENING IN THE SUBURBS -- or how to simply make pretty and productive gardens looking so great you could eat them-literally! In years gone by local gardens and small intensive (largely non chemical) market gardens close to towns and cities supplied the local population with the bulk of their food stuffs plus surplus to export.

It is a premise of Permaculture that only a small proportion of currently available land mostly available within our suburbs and towns could feed the local population.

Even if this aim has not yet been approached, any local food growing fosters long forgotten skills and links to the land, attacks the myth of seemingly endless supplies of food in our supermarkets which has actually travelled miles if not half way around the world.

Growing any food shows us its real marvel and value and links us to our local season and corresponding metabolic states.

The general approach of this eclectic booklet is to explain how to create and use simple edible gardens. This approach is based on my experience and testing of many organic gardening methods and Permaculture ethics and design ideas. To state the obvious these methods involve observing and working with nature for the maximum amount of benefit for all plants, structures and animals involved--( ourselves included ! ) .

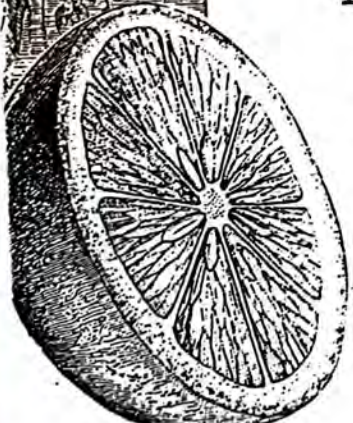
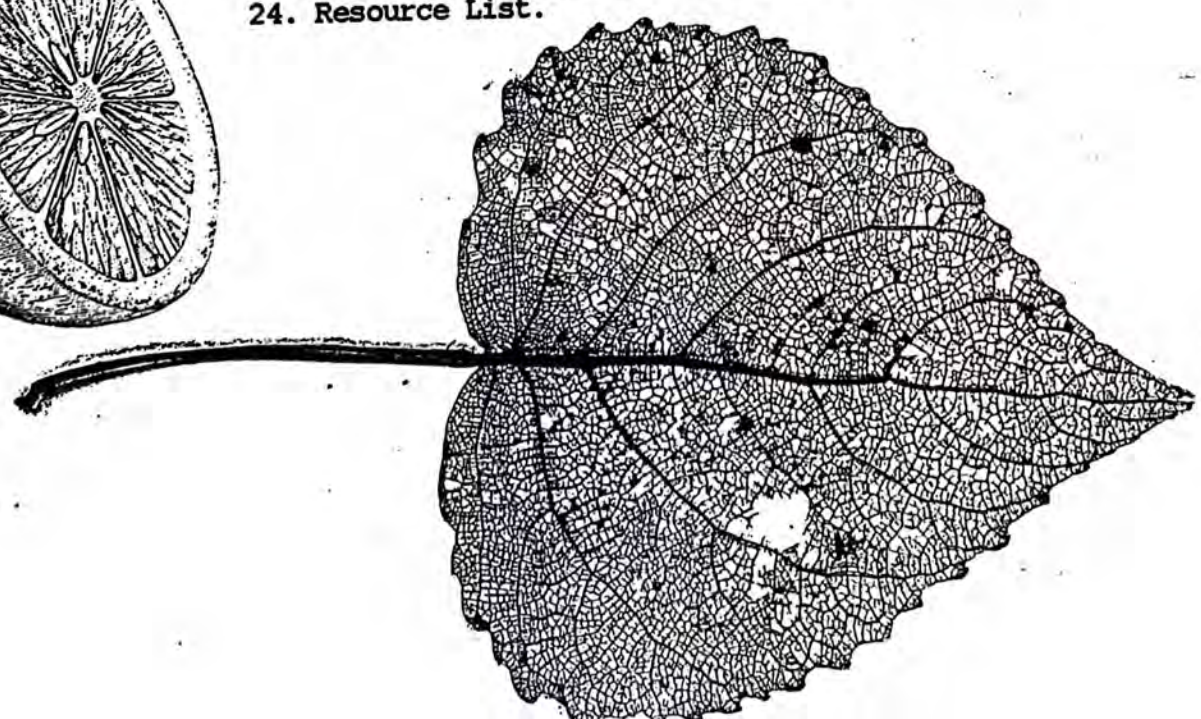


Presented by Paul Fletcher, B.A., Adv. Cert. Hort., Pc. Gardener of a local four acre Uniting Church property for the last five years, trained at Burnley V.C.A.H., Organic Growers Assoc. Member and a trained Permaculture Design consultant.





### INDEX.

1. Compost uses / benefits.
  2. Composting choices.
  3. Life inside and aerobic Compost.
  4. Free fertilisers.
  5. No- dig.
  6. Worms + On site Composting.
  7. Worm farming.
  8. Dealing with shade.+ City as a farm.
  9. Seed saving. Plant propagation.
  10. Seed Saving pt 2. Green manure.
  11. Perennial Vegie gardens.
  12. Companion planting.
  13. Natural Pest control.
  14. Integrated pest management.
  15. `Safe` Disease and insect sprays.
  16. Weeds. + Encouraging Native Animals.
  17. Keeping Small Animals.
  18. Bush food foraging in the city. Rainforest plants for Melbourne.
  19. Other useful plants.
  20. Solstice. Designing your block or doorstep.
  23. Trees and buildings and drains.
  24. Resource List.
- 
- 

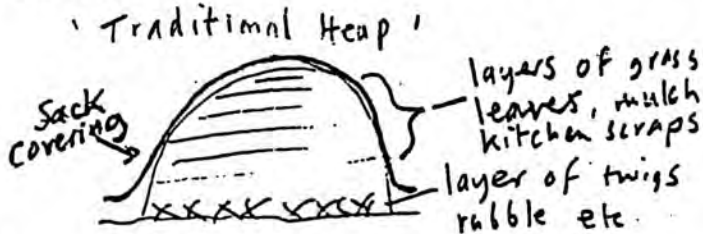
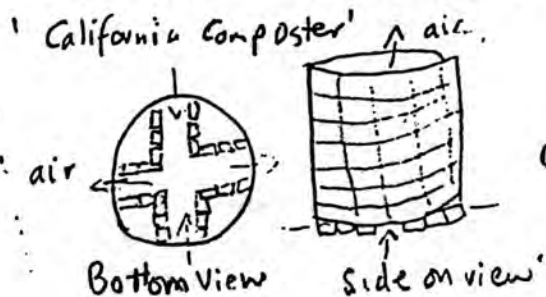
# Compost Uses and Benefits.

## Compost uses and benefits.

- mulch, fertiliser, soil re-vitaliser ; adds microbial life to soils in the form of; beneficial bacteria , actinomycetes, funghi and soil yeasts.
  - the soil life associated with compost can help suppress many soilborne diseases and pests such as 'root rot' ,eelworms and even pathogens such as pythopthera.
  - most weed seeds can be destroyed in an aerobic compost heap where the temperature can reach as high as 50 to 70 degrees celsius.
- Compost helps in pest control directly in the soil and indirectly through providing the conditions for healthy plant growth which is then in turn less susceptible to insect pest or disease attack. Compost can be used as a lighter substitute for soil in roof gardens, no-dig gardens, and in potting mixes. Spread on the garden as a top dressing it encourages earthworms.



Composting is in a way an imitation of the natural cycling and re-cycling of nutrients that occurs in a natural unharmed eco-system, such as a rainforest or mangrove. By putting kitchen food wastes into a compost heap or feeding them first to nutrient -convertors such as chooks, quail or guinea-pigs ,we help complete one cycle of returning to the earth some of what we have taken out and allow it to provide us with more again.



## Composting Choices.

### Aerobic Composting :

- can be ready in as little as 14 days.
- can use bought or home made compost tumblers
- or can use 3-bin system with exercise of forking composting into alternate parking bay every 2 or 3 days for 14 day result or once every week for usable good compost in a month (time also affected by weather conditions - warmth accelerates process).
- ideal minimum size of heap for this process is one cubic metre.
- compost from this method will have gone through some natural pasteurising with temperatures up to 70 degrees celsius so most weed seeds will have been destroyed as well harmful bacteria.
- this compost can be directly used as a potting mix ingredient, top soil, or sieved for a fine seed raising mix or alternative to peat moss, or in its dry state processed to a complete potting mix by running through a mulcher.

### Non-aerobic Composting.

- can take 4 to 12 months to be ready to use
- can use various bought compost bins or re-use old bins with bottoms cut out or with plenty of drainage holes.
- aeration and drainage can be improved by placing bin on terracotta /porous base, or a criss-cross pattern of bricks, and or a layer of twigs. Aeration can also be improved by inserting a slotted plastic, metal or bamboo pipe into the middle of the filled bin (this same pipe could be used for getting water or liquid fertiliser more evenly into the heap if necessary).
- this compost is fine to use in bottom or middle layers of a no dig garden or if sufficiently broken down ( i.e. no recognisable vegetable objects) could be used as a top dressing but is unlikely to be usable for a potting mix.
- compost bins open at the bottom sometimes can start working as worm farms, in this case the added food scraps are broken down quicker and you may never be able to fill the bin.
- for the best composting in these bins they need to be filled up with a good mix of different layers of materials ( see classic compost recipe) and then left to decompose - so a household may need several different bins placed strategically around the garden.

### Semi-Aerobic Compost.

- wire mesh pegged together to make vertical standing cylinder with temporary linings of newspaper or permanent lining of shade cloth
- several of these could be placed around the garden at strategic sites so that when ready to use they can be simply unpegged and spread onto the garden area next to them.



# Life inside a Healthy Compost.

## LIFE INSIDE AN AEROBIC COMPOST HEAP.

A. Compost starts off at air temperature .

1. Within next couple of hours temp. rises to between 20 to 40 celsius. This is called the Mesophilic range and is associated with a population explosion of micro-organisms and their subsequent feverish decomposing of organic matter. PH level drops (becomes more acid) as organic acids are produced and some Nitrogen in the form of Ammonium gas is released to the atmosphere.

Above 40 c. the Thermophilic range, a different breed of micro-organisms take over.

At 60 c. unwanted funghi are destroyed or de-activated.

As high as 75c. the breakdown of organic matter is continued by actinomycetes and beneficial funghi. At this stage all the small materials will be broken down and only coarse fibrous materials left.

This is in effect a food shortage for the micro-organisms, the temperature drops down through the stages just described (i.e now happening in reverse order). However there is now more intense competition between the biological inmates and this results in the production of antibiotic substances perhaps aimed to protect the organisms from each other and their food source but also for our benefit controlling organisms involved in many soil borne diseases such as root rot and others.

Once the compost is back at close to the surrounding air temperature the heap may be turned, this will re-mix the materials and provide more oxygen thus allowing the whole process to begin again allowing more even and complete composting of all the materials. Once the compost no longer heats up when turned it is relatively stable and ready to use. At this stage there should be very

few small recognisable materials, and should be a dark sweet smelling substance that your garden worms would love to get into !



FREE FERTILISERS AND COMPOST INGREDIENTS.

Substance.	Nitrogen	Phosphorus	Potassium
Human Urine	15-19%	-	-
Hair	15	-	-
Feathers	15	-	-
Leather(ground)	11	-	-
King crab (dried and ground)	10	.2	.06
Fish scrap	6to 7	3to 13	.3
By product from silk mills	8	1.1	.12
Felt	8	-	-
Silk worm cocoons	9	1.8	1
Bat guano	6	9	-
soot from chimney	5	1	.35
wool waste	5.5	-	2
meat scraps	4	-	-
Lobster shells	4	3.5	-
Pigeon manure	4	2.2	1.4
Tea leaves	1to 4	-	-
Peanut shells	1 to 6	-	-
grass	1 to 4	-	-
Purslane	4	-	-
Bone meal	4	21.0	.2
Tobacco leaves	4	.5	6.0
Tobacco stalks	3.7	.6	4.5
Tobacco stems	2.5	.9	7.0
Lucerne hay	2.4	.5	2.1
Hen manure	1.6	1.5	.85
Duck manure	1.12	1.44	.49
seaweed	1.68	.75	4.93
Comfrey leaves	.72	.17	.70
Horse manure	.44	.17	.35
Cow manure	.29	.17	.10
corn cob ash	-	-	50.00
banana skin ash	-	-	41.76
lemon skin ash	-	6.30	31.00
grapefruit skin ash	-	3.58	30.60
cucumber skin ash	-	11.28	27.20
powderworks waste	2.5	-	17.0
pumpkin seeds	-	-	13.04
wood ashes(unleached)	-	-	7.0
bracken ash	-	-	15.0

Free Fertilisers-- Some of these substances may seem a bit exotic ;

Bat guano may seem like a gourmet hard to get trendy animal manure but maybe you could attract native bats to nest in a nesting box attached to a tree or under your house eaves! The point of these figures is to convey the value of organic materials as natural fertilisers often already on site-- the point is not to go travelling miles to grab or buy some exotic plant matter or animal residue. Beneficial plants even if only grown for mulch can be planted, local waste products may be usable and weeds can definitely be useful. The addition of elements such as Nitrogen from plant growth and residues may be a more subtle and long term affair than instantly dumping a bag of highly concentrated chemical salts, but does not contribute to any forms of land degradation and it does help to build soil life, structure ,water holding capacity and fertility!

**CAUTIONARY NOTE :** when handling any organic materials; while they may be natural can still pose health risks. Take obvious care to prevent infection to open wounds e.g. use gloves and wash carefully.

Dust spores from manures and compost, mostly when too dry, can cause respiratory infections and could cause serious disease --it is safest to lightly spray with water any materials that are dust dry before handling and you could wear a small dust mask for extra caution.

**NO-DIG GARDEN -LAYER UPON LAYER.**

A no dig-garden is like a form of on site composting and can be a way of using all sorts of otherwise unused organic materials . They can be made in any size container or on any type of ground or even on concrete. Provided drainage is taken care of they can be made and used indoors, on roof-tops or raised off the ground for 'no back bend gardens'!

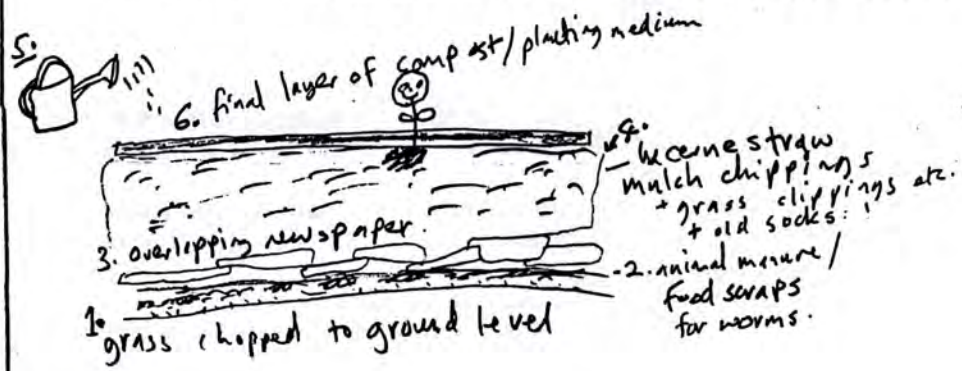
Many different methods can be dreamt up but the basic principle is as follows:

1. Mow, whipper snip, chop to ground level or smother existing weeds or grass.
2. Spread a thin layer of animal manure , or any organic fertiliser or kitchen scraps as encouragement for worms. Water this and the following layers thoroughly or construct on a gently raining day!
3. Cover with overlapping newspapers ( up to an edition of the Age thick !)
4. Spread up to a foot thick of any one or a combination of the following ; lucerne straw , vegetable scraps mixed with hardwood sawdust , council or domestic plant chipper mulch , rice hulls mixed with grass clippings and leaves.
5. Water thoroughly with any organic liquid fertiliser. OR:- Spread thin layers of animal manure in between the other materials.
6. Spread a final layer of compost or potting mix 5 to 10 cm (2 to 6 inches) and plant seeds and seedlings into this- water and leave .

N.B. May take up to 4 weeks for nearby slugs and snails to move into the new no-dig garden seedlings may be advanced enough by this stage.

Alternatively duck patrol could be sent in before and after setting up or snail traps could be set at the four week stage such as saucers of beer, hollowed grapefruit, protective 'fenceline' of wood ash and shellgrit or other abrasive mulch.

\* If too large an area / not enough compost - seeds and seedlings could be planted in little compost filled holes in the top layer of mulch rather than a complete layer of compost all over the area .





## WORMS

Worms benefit the soil and plants by Feeding, Burrowing and Cast-production (excreta).

**FEEDING:** Most common worms, feed from the surface (most actively at night!) and drag the materials from the surface down into the deeper layers of the soil easily down to ten inches deep (some native worms are even known to burrow down into clay hard pans to a very great depth). This means that worms can help distribute mulch materials such as crop residues / straw and even additives such as lime into the lower layers of the soil - without any human or mechanical assistance/interference.

**BURROWING:** worms develop their own tunnels to travel most often vertically and horizontally through the soil, -- this aids in improving the structure, air content and water holding capacity of soils and even allows 'free rides' for young plant roots also sharing these tunnels. New Zealand tests have shown worms in pasture soils to increase water holding capacity by up to 30% !

**CAST PRODUCTION-**Vermicast, worm excreta, improves the soil chemically, that is it increases the fertility of the soil mostly by processing the nutrients into more readily usable forms for plant roots and no doubt by all sorts of associations with microbes that pass through the worms digestion system for instance and the host of other possibilities of which no one yet knows the whole story. In a healthy soil there can be as much biomass (weight of living material) under the ground as above it !

## On site Composting / and Animal assistance.

Self-mulching plants, those that produce a lot of sacrificial roots underground and above ground leaf litter or whole plant in the case of annuals like corn and sunflowers produce a composting effect similar to a forest floor - this can also be simulated with extra mulch materials gathered from nearby-- mowing contractors debris, street tree leaves etc.

At the end of a growing season chooks can be fenced into a garden area to dig over the top layers of organic matter and fertilise at the same time. Guinea pigs can remove grass from an area of soil and encourage worm life with their mild manure. Worms are of course a major recycler of organic matter, are encouraged by most mulches and can be used to convert kitchen scraps. (See Worm Farm section)

## CLASSIC COMPOST RECIPE.

2 parts grass clippings (light nitrogen source)  
2 parts chook or other manure or fertiliser (high nitrogen source)  
1 part hardwood sawdust, crushed peanut shells, dry garden leaves  
or wood chips (high carbon source.)

Mix evenly or place in layers and wait patiently, or turn over for aeration and gradual mixing every two to three days if in heap system.

Herbal additions to compost : yarrow, tansy and chamomile  
Borage and particularly comfrey leaves are good compost activators or can be soaked in a bucket of water (2-4 weeks) to make a liquid fertiliser to water the heap with.

## Worm Farming.

**Simple Worm Farm:-** wire mesh cylinder pegged together and lined with newspaper. This is the same as a compost bin but needs to be treated slightly differently. The bottom layer of material should be a suitable bedding mixture for the worms- e.g. partly decomposed horse manure and straw (this is safest if it has been left out in the rain for a month to leach out; heat build up, urine and any drenches/ chemicals poisonous to worms). Other bedding materials include old deep litter aged straw and manure from any animals - but do not use fresh chook manure as it is too strong. The bedding material needs to be light and airy for the worms to shelter and breed in -- too much food or compaction and the worms will move somewhere better or die from suffocation, acidic conditions and poisonous gases. The bedding material also needs to be sprinkled lightly with garden Lime or Dolomite.

General garden and kitchen scraps mixed with shredded cardboard is an example of readily available suburban feeding materials and many other wasted sources probably exist for example in the food and restaurant industry. Food should only be added to a depth of no more than 5 cm at any one time (to avoid heat and carbon dioxide build up and lack of oxygen).

### Worms and Ph.

Worms need a Ph neutral range but can tolerate and modify to neutral ph in the range of ph. 6.5 to 7.5.

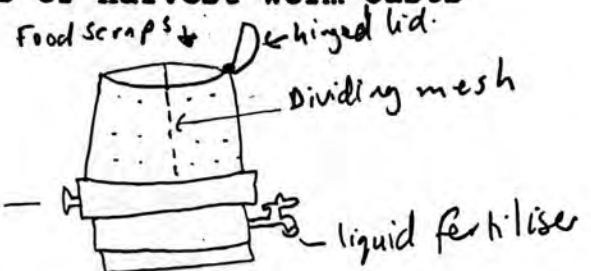
### N.B.

The whole worm bin has to be moist but not flooded at all times and an easily removable insulating cover such as sacks or old woollen carpet helps in this regard.

### Harvesting Worm Castings.

Three to six months after the first feeding worm castings should be harvestable from the bottom of the bin (lift up and scrape out).

Worm farming methods vary slightly depending on whether the first priority is to breed worms or harvest worm casts (vermicast).



Rolls royce` compost bin / worm farm.

Sliding  
tray to  
harvest  
worm castings.

There is much more to worm farming than these couple of paragraphs. Further details can be found in the booklet 'Worms downunder' send SAE envelope to Allscape Mandurang 3551. for any enquiries.

## DEALING WITH SHADE.

densely built up towns and suburbs or even large trees can create problems of too much shade for peak growing of all vegetables.

Options--

1. move.... and select a site that does have a good northern aspect.
2. stay where you are and;prune carefully some of the branches out of large trees to let some light through if needed.remove unhelpful big trees that are in inappropriate positions and replace with (you guessed it) helpful or appropriate trees in useful positions.

-grow vertically up walls ,in window boxes.on rooves.

-grow shade tolerant plants - some vegies are included in this category(also Blueberry,+ Alpine Strawberry)

plants under the shade of trees or buildings may need more food and water and not produce as big a harvest as those in better situations but on the other hand they may be kept warmer longer and be better protected from frosts.

Vegies tolerant of some shade; rhubarb, lettuce, spinach sorrell, endive, radishes, beetroots, cabbage and carrots and many herbs.

A no-dig garden ,placed on a barrier of black plastic ( on a slight slope to allow some drainage) may be needed to grow small plants under large trees with vigorous surface roots. This method could not however be used around all sides of the tree without damaging that tree .

## CITY AS A FARM.

The city can be farmed for sources of ingredients for composts , worm farms and no-dig gardens. Some examples are :-

-lawn clippings, from councils, private mowing contractors or neighbors

-tree chippings /mulch , as above plus domestic mulcher /mower

-food scraps /wastes from; homes, commercial kitchens, restaurants etc

-manure, from compost toilets, zoos, horse stables, domestic animals such as guinea pigs ducks, chooks , , etc but not from cats or dogs due to spread of diseases transmittable to humans.

- hair from barbers, wool clippings,( also said to repel possums)

-sawdust-from woodyards, butchers (blood and bone) -waste from fish processing and newspapers.

- ''Soil Tech Research'' in Tasmania estimated , conservatively that just in their small state 20 to 40,000 TONNES of organic matter,suitable for composting, is produced annually and currently is mostly ending up dumped somewhere. At the individual household level at least 30% of domestic garbage is easily compostable.

- let at least one of most annual vegetables self seed themselves. Lettuce are very suited to this method as are many small flowers, basil, tomatoes and so on. Carrots for example if left to go to seed; first produce interesting and attractive flower heads which then produce bountiful quantities of viable seed some of which can be collected and spread over different parts of the garden ( even thrown into a lawn / meadow ) - you may want to particularly save seed from a plant exhibiting especially desired characteristics ; for example the earliest and healthiest fruiting tomato bush. However unless selectively bred over many generations there is no guarantee of identical results; two seeds saved from the same bush could produce two plants with as many genetic differences as there are between myself and my brother or even between myself and you ! This great genetic diversity is actually the very strength of any ecosystem. The slight differences between plants of the same species allows for tolerances of different seasonal weather , soil, and insect attacks, and even to the birth of slightly new species. Seeds saved from your own garden year after year are likely to become genetically adapted to the specific conditions of your area. Commercially hybridised seeds are mostly cross-bred for only one of set of criteria ( mostly tied to profit, vertical marketing of fertiliser pesticides fungicides and so on) they are usually sterile or not able to reproduce at all true to type and so are totally useless for saving . See resource list for suppliers of tried and true non-hybrid seeds, and seed saver networks or start your own .

#### Collecting Seed.

The collection of seed , separation of it from its pod or fleshy surrounds and the immediate sowing or storing of it differs naturally between different types of seed. Most seeds need to be healthy looking plump and starting to dry out in many cases turning some shade of brown ( as opposed to their juvenile mostly pink or green state) .



Seeds surrounded by pulp such as those in pumpkin, cucurbits in general, tomato, eggplant, tamarillo etc. can be soaked in water to help separate them from the pulp. -- then rubbed clean by hand while wet, or after drying out, on for example, some absorbent paper or newspaper. If these seeds are stored with the pulp left on them this is most likely to start growing some sort of mould which would be likely to affect the viability of the seed itself.

Seeds such as those of broccoli (brassicas generally) wallflowers and poppies for example, grow in very convenient little seed pods which when ready will have turned brownish and brittle-- easily to crumble up or split open emptying out masses of clean seed-- collect on a dry day and they may need no special treatment. This is an extremely brief introduction to this area, for more detailed information try it out yourself and or consult, 'The Seed Savers Handbook' full details in resource list. Many soft stemmed fast growing plants for example Broccoli, Tamarillo, and most herbs grow very easily from cuttings. This is a way of duplicating the original plant, this produces a genetically identical natural clone if you like. Given plenty of moisture, crumbly well aerated and drained soil (e.g. good compost) many plants can be rooted directly into garden beds-- this works well in conditions of moderate warmth and light rain.



#### GREEN MANURES

Green Manures are sacrificial crops grown for their soil building qualities. They enrich the soil naturally by the actions of their roots combined with other soil organisms, and by the providing of rich organic matter given back to the soil in the form of leaf litter.

Plants grown as green manures can be worked into a crop rotation scheme, as a first pioneering sacrificial crop or a continual interplanting with another wanted crop in a Permaculture type system. They are called 'sacrificial' crops because they are either; grown to be continually grazed, or chopped back for a source of mulch (in the case of perennial green manures), or grown to the flowering stage then chopped down to the ground and left to rot where they stood or dug into the soil. (Whether to leave the plant matter on the surface or dig in is a matter of choice, compromise and some debate.)

Examples of suitable plants to use as green manures include;

Nitrogen fixing (and adding to the soil) legumes, alfalfa / lucerne, clover, peas, lupins, beans, even accaias and alders. Non nitrogen fixing but rapid growth of good organic material; sunflower, millet, rye, buckwheat, borage, comfrey and even corn.

## PERENNIAL VEGIE GARDENS.

As goes for many so called annual flowers, many vegetables can be grown on for several years or left to continually re-seed themselves if grown from good non hybrid stock. Complimentary to this approach is a different approach to harvesting of vegetables. With the vegetable garden only steps away from the kitchen, it is quite practical to pick small amounts of vegetables frequently as needed. So once a brocolli plant has produced its first big edible flower head the rest of the plant need not be discarded, if picked regularly small brocolli heads or florets will continue to produce for months even a couple of years! Small young shoots from the brocolli plant can also be used as cuttings for new plants. Silver beet, if picked regularly and growing well, can be kept from going to seed and grown on for a couple of years and then left to go to seed before composting the rest of the plant. Many lettuce if cut higher up their trunk than usual are particularly good at growing new hearts, alternatively just the outer leaves can be continually picked. Potatos if grown in a light soil or no-dig garden can be picked out from the parent roots while letting the bulk of the plant to keep on growing.

## OTHER TECHNIQUES FOR YEAR ROUND FOOD FROM YOUR GARDEN.

- planting vegetables earlier and later than the cautious and generalised recommendations on most seed packets.
- extending the growing season by providing extra warmth ( warm micro climates exist near north facing brick walls, pavement or rockeries)
- extending the growing season of winter vegetables: by adding shade or growing some plants in the shade, or by adding a light mulch to keep in the cold moist soil temperatures into early spring.
- staggered planting of the same crops, a general principle here is to plant more of the same crop every four weeks or as the first crop just starts to flower.
- start seedling indoors,
- use a greenhouse or cold frame
- grow different varieties of the same vegetable, to allow for unpredictable weather conditions and a longer growing period. For example there are a multitude of tomato varieties for all sorts of different fruits and conditions. There are enough varieties of Onions and Lettuces to be able to harvest some every month of the year, especially if new seedlings are planted at every two to six weeks. Many Asian vegetables are easily grown and very useful over the quieter winter months.



## COMPANION PLANTING.

Companion planting aims to make use of plants' chemical or physical complimentary and antagonistic effects on plant growth, pests and diseases. This can involve any or all of the following;

A. Root Exudates - substances are secreted from the plant roots for example as is the case with African Marigolds whose roots secrete a substance that repels specific nematodes that are destructive pests of many vegetables such as eggplants and beans.

B. Repelling or Confusing Scents ( Aromatherapy for gardens?) -most insects find their favorite food plants by smell , strong aromas of herbs can mask (overpower) the precious crops' scent or can be repellent to the insect concerned. e.g. Sage is said to repel cabbage butterfly , and feverfew / pyrethrum has been shown to protect lettuces.

C. Physical and Nutrient Compatibility - logical ways of saving space  
e.g. root crops grown between leaf crops and taller crops- also makes best use of available nutrients.

A classic intensive combination is where one plant is used as living productive trellis for another. For example cucumbers and climbing beans can be grown up sweet corn stalks and carrots and raddishes grown in between the lot of them.

Irregular, random or triangular spacing of plants is also suggested to help with increasing the number of possible complimentary effects and makes it harder for insects to find their food as they have limited directional skills and like travelling in straight lines.

It is important to try out and observe what combinations of plants and animals go well together in your own situation.

Generally a diversity of species is best. Most herbs are beneficial to fruit and vegetable growing, with the exception of Wormwood and Rue which are both good insect repellent plants but inhibit the growth of most plants adjacent to them ( thus they may be useful as a weed barrier).

A Permaculture garden relies on a complimentary succession of diverse plant and animal species developing over time. Bill Mollison writes of plant and animal guilds ,  
" an harmonious assembly of species clustered around a central element (plant or animal)" .

Some guilds are ;

- Parsley , basil , Tomatos , peppers, eggplants, carrots, calendula ( pot marigold) and small birds .
- Beans , carrots, cabbages , sage, pyrethrum and rosemary, frogs, birds and spiders.
- Broccoli, Silver beet, Onions , Garlic,
- agapanthus, snails and chooks.
- fish, ducks, mosquitos , frogs and various water plants. Comfrey, chooks , chokos and nettle.



NATURAL PEST CONTROL.



The ideal is to develop as complete a natural eco-system as possible where the beauty and diversity of the insects animals and plants are in a state of dynamic balance. Put simply it is definitely not a matter of attempting to wipe out what we may first see as 'PEST'. We do have the power to just about do this- but more often than not this approach ends up increasing the strength and numbers of the original pest, through development of resistant strains and destruction of natural predators.



Fungicide, pesticide and herbicide residues have, sadly, been traced as far away as the Nth Pole in the breast milk of Eskimo mothers.

Sometimes what first may seem a pest can turn out to have a very important role or unrealised benefit -- regardless you cannot take any part (e.g. insect 'pest') out of the whole (ecosystem) without directly influencing every other part of the system and most likely upsetting a finely tuned complex balance or procession of life forms.

Snails' slime helps make soil crumbs, aphids may have a role in controlling the balance of plant sugars in a plant and couch grass may be a pioneering plant binding a disturbed loose soil together so that other plants can then grow in it and take over.

Any plant labelled a 'weed' is deemed an unwanted, unnecessary 'pest' and vice versa. In many cases so called weeds are invaluable for their secondary benefits such as the mining of nutrients locked up deeper in the subsoil - examples of such a weed are docks, dandelion (also health drink, and latex source), borage and comfrey. Obviously a garden bed forever with 95% unwanted weeds and a few struggling little lettuces would be out of balance for our needs.



**SOME FACTS FOR HORTICULTURAL TRIVIAL PURSUIT.**  
 One rye plant grown in well structured fertile soil produces an average of three kilometres of roots per day, 387 kilometres per season and 6,603 kilometres of root hairs---- spare a thought for the researchers who had to measure them !  
 Most small plants can put many kilograms of roots into the soil, add all the living soil organisms and you have the dynamic living system that is a healthy soil.







Native flowering shrubs to attract small insect eating birds Nesting boxes for small birds in the usual absence of big old trees with nesting hollows.

Planting of different varieties of the same plant and a variety of different species for greater likelihood of disease resistant plants to be among them and also to make it harder for a single pest or disease to build up out of control ( as happens in a plant monoculture).

Healthy balanced soil fertility means healthy balanced plant growth means plants less attractive to or needing of insect attack.

Use organic mulches to smother and prevent many weeds, which may otherwise serve as breeding ground for excessive pest build up.

Mulch also provides a home for many beneficial predator grubs such as beetles , spiders and centipedes.

(Centipedes make sense millipedes are monsters!)

Use certain mulches as irritants to the soft mucous like skins of unwanted insects such as slugs and snails- e.g.borders or overall cover of crushed egg shells, shell grit, wood ash,or chopped up hair.

Hedges can trap tiny windborne; insects, bacteria, air borne lead and other pollutants (eg.from cars), and weed seeds . The same hedge can serve as a fence, wildlife shelter and nesting site and be fruitful or nut full, if for instance grown from hazlenut , or apples and berries.

Crop rotation and or companion planting. Interplanting of mini hedges or borders of herbs. The Allium family, a very decent helpful bunch ,includes onion, chives, garlic and a few others and they all have beneficial natural antibiotic and fungicidal effects in the soil and thus on plant growth as well as repelling scents for most insect pests (and some humans- pest or friends!). As well as that the allium family are all eventually harvestable for food or pest sprays.

Up to a third of the leaf area of many vegetable plants can be damaged or totally consumed by insect pests and actually result in more growing energy going into the reproductive / fruiting part of the plant- So in the case of beans the part we want to eat is the seed pod (reproductive/ fruiting part) and with a third of the leaf area chewed off we could actually get an increased yield for letting the insects have their share !

Beneficial predators to encourage include, frogs, ducks, chooks,quail, reptiles (lizards especially),bats, hoverfly, ladybirds,lacewings, ground beetles, preying mantids, and spiders.



Safe Disease and Insect Sprays.

There are 'safe' sprays and traps but these are best used a last measure after all others have failed and an extremely valuable plant crop is at risk of being totally annihilated. In that sort of case it is most likely a sign that the general conditions are not right for the particular variety of plant and that they are so unhealthy that insects 'feel' it necessary to destroy them. General use pest sprays can be made from many plants some of the most well known being ; the Pyrethrum daisy (and its weaker relative Feverfew), Rhubarb or Lantana leaves and Garlic and Eucalyptus oil. Helleborous roots can be dried and ground up into an insectide dust similar to Derris dust. Other strategies include hosing off and drowning small insects with a strong spray of water, soapy or oil solutions particularly for scale.

Pyrethrum- readily available commercially, residual effect only up to 12 hours, safest sprayed at sunset so as not to effect bees. Poisonous to some beneficial insects and valuable predators Lacewings ,Ladybird larvae and eggs, use with care.

Quassia-- made up from boiling wood chips from the plant Picrasma quassioides in a solution of water and soft soap, poisonous to small caterpillars and aphids but does not harm any beneficial predators except hoverfly larvae.

Potassium permanganate; mix 25gm. into 8 litres of water poisonous to aphids and powdery mildew.- residual effect for 4 hours only.

(Neem tree oil , Melia Azaderach are two native sources of powerful /toxic natural insecticide.)

HOME MADE GARLIC SPRAY RECIPE. - very quick break down / little residual effect , low toxicity , need frequent spraying to be completely effective .

Chop 70gm. of garlic, mix with 2 teaspoons of liquid paraffin oil ( or melted paraffin wax). leave to soak for 48 hours.

add 1 litre of water and 7gm of good oil based pure soap (such as 'velvet' or 'perservene') .

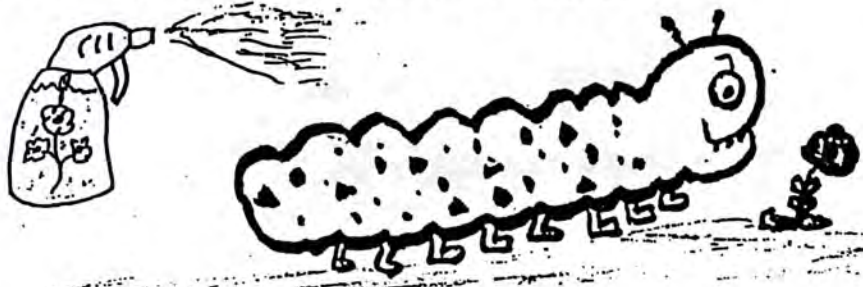
Filter and store in a sealed container.

Dilute strongly with water to use .

(1 to 2% solution with water)

Above recipe was formulated and tested by the Henry Doubleday Research Association in Britain. Claimed to be very effective in controlling woolly aphids in humid/muggy conditions and had the following success rates with these insects; wire-worm 83%, snails 87% , aphids 72% , codlin moth 98% , white moth 98%.

The best approach for control of aphids and similar pests is to encourage their predators (such as small birds, ladybirds and lacewings) by the planting of many flowering herbs such as dill, aniseed , valerian and even some carrots left to flower.



POSITIVE POINTS TO KEEP IN MIND ABOUT WEEDS.

- they can be indicators of soil conditions ( some examples; mosses indicate acid conditions, nettle indicates likely fertile soil and capeweed often indicates recently disturbed soil)
- weeds can be used as a source of fertile mulch or made into liquid manure
- some are edible as salad greens (e.g. dandelion, purslane, or steamed blanched couch and kikuyu ),
- tea or coffee substitutes dandelion and other deep substantial roots can be roasted and ground up to use as coffee alternative
- or even medicinal (self heal, plantain et al)

CONTROL OF UNWANTED WEEDS:

- thick mulches 1 -6 inches.
- competition from desired plants - a living mulch of ground covers, thickly self seeding annuals shrubs and trees .- potatos grown as preliminary crop to break up soil and shade out weeds for first season then replanted with new garden plants.
- solarisation of soil; a sheet of clear plastic is placed over the soil for several weeks ( works best in Summer) the sun pasteurises the soil killing off most soil diseases and existing plants (ie weeds) and most of their seeds.
- ' chook and quail tractors' the animals are confined to a small area for a couple of weeks at least ( during the day only) and encouraged to dig over, eat slugs and other pests and fertilise the soil.

ENCOURAGING NATIVE ANIMALS.

- most of the major habitats for our native animals within the suburbs are all but none existent - some animal species have adapted better than others to living in alternative nesting sites such as our house rooves and even changed their diet to include roses and lemons.

Other species have not faired so well. Where there are no old rotting tree stumps or mature large trees with hollows in them, nesting boxes can help . Equally important is understorey shrub and ground cover plantings which are beneficial to the aesthetics and health of your garden as well as providing protection and nesting sites for small birds at least. Where council regulations and commonsense safety allows naturestrips could be planted as gestures towards wildlife and bush food corridors that could only help.

KEEPING CATS AWAY. prickly berries, acacia paradoxa, microcitrus australis, large bush roses or briar roses (flowers and rose hip produce as well) could be grown as an impenetrable border around fencelines- a kind anti-cat fortress concept or just sections of your garden could be made into safe wildlife refuge areas . Catmint is said to be able to be used to attract cats and could be used to lure them away from other areas, but I would not bet on the success of this .

Firstly it is best to check on local council regulations as they vary greatly. Neighbors really need to be considered also- this may only involve trading or giving away any surplus fresh chook eggs or letting the neighbors children visit the animals safely.

Useful domestic animals suitable for small areas include,

Guinea pigs--weed eaters, fertiliser / earthworm companion, lawn mowers and eat many kitchen scraps.

Ducks - 'Khaki Cambell' one of the so called smaller varieties, excellent snail and slug digester, rich fertiliser, as long as kept out of chooks water can get along quite well with chooks.

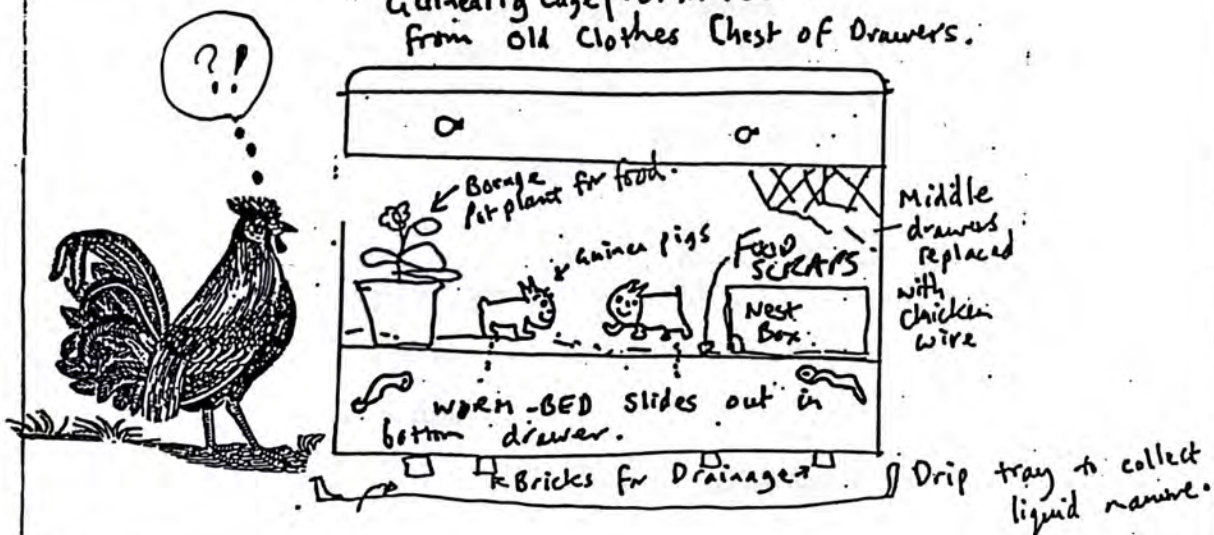
Pigeons - high phosphorous containing manure-converter of grains-hard to grow their food in a small area- though if trained to nesting box ( e.g. tea chest size box for two to 4 pairs) can range over the suburbs for some of their food.,

Quail-- industrious little, small grain and insect eating bird, can have bottom section of chook house or could be good insect pest controllers in a greenhouse so long as they have a dry section to retreat from any automatic sprinklers.

Chooks- plenty of written material available on them, even a very small number can add a huge input to a home and garden system--excellent kitchen scrap recycler (very few exceptions such as onions and citrus skins) . great at turning over a garden bed at the end of a season, digging in and breaking up plant and vegetable matter and consuming many insect pests.

Apart from anything else I have found all of these animals surprising in their habits and activities- often amusing, relaxing, and educational. Basically like ourselves and every other animal their absolute essential needs are clean air and water. Second to those needs comes protection from extremes of weather and from predators.

Guinea Pig Cage/Worm Farm  
from Old Clothes Chest of Drawers.





Rainforest Plants that have edible fruits or nuts and may do well in Melbourne.

(all need moderate warmth, moisture and shelter)

- Sterculia Quadrifida* - Bush Peanut, small tree.
- Planchonella Australis* -- Black apple, small tree.
- Diplogottis campbelli* -- Small leaved tamarind.
- Davidsonia pruriens* - Davidsons Plum.
- Microcitrus Australis* -- small thorny ground cover bush with green lime tasting fruit.

Bush Food Foraging In The City - The City as a Farm.

*Bunya bunya pine* - enormous pineapple shaped cones drop around xmas time with up to 30 large succulent pine nuts in each cone. (very large tree often found in parks and larger gardens)

*Lilypillies* - very common street and garden small tree fruit varies in taste between trees (i.e. there has been no deliberate selection and breeding of this species for the use of their fruit) fruit is however always edible and can be eaten raw or made into jams and jellies (some produced commercially)

*Moreton bay figs* - large spectacular trees vaguely edible masses of fruits.

*Astromyrtus dulcis* - Midyim berry, small, slightly ginger tasting round berries, groundcover bush

*Aleurites moluccana* - Candle nut tree, large quick growing tree, needs frost protection when young, nuts edible after being roasted (to remove harmful bitter oils). Tasty and nutritious eaten in moderation.

Raw shelled nuts can also be strung on a wire and set alight to use as candles (fuelled by their own oils).

*Cissus antartica* - Kangaroo vine, can be grown as indoor plant, can produce a grape like fruit.

*Acacia longifolia* - green seeds can be used as a soap substitute (traditional Aboriginal use.)

There are over 900 species of *Acacia*, wattles from groundcovers to massive trees, all nitrogen fixing. Only as few as 100 of them have edible seeds, roots, gums, associated grubs, or flowers and pollen.

Some of the many common examples are;

Containing Edible Seeds- roasted and ground for flour or coffee like drink; *Acacia longiflora*, *A. concurrens*, *A. acuminata*.

Having Edible Roots; *Acacia bidwilli*, *A. mangium*

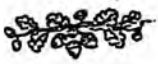
Containing Edible Gum; *A. decurrens*, *A. melanoxylon*, *A. torulosa* and *Acacia pycnantha*.

References;

"Mutooroo, Plant use by Australian Aboriginal People" compiled by Glen Leiper. Assembly Kingswood Press, Underwood QLD.

"The Bushfood Handbook" Cherikoff and Isaacs. Griffin Press.

"Australian Rainforest Plants" Nan and Hugh Nicholson





#### OTHER PLANTS AND THEIR USES.

Iris; Pallida , Germanica and Florentina - roots can be dried and ground for orris root powder- perfume fixative in potpourri. Iris root powder has in previous times been used as a baby powder and talcum powder.

Valerian is a herb which is good for the soil and said to be popular with earthworms. The dried root can also be used as an orris root powder but more importantly is a strong calmative - the original source of valium and can be used in a herbal drink .

Edible flowers: Bellis perennis (lawn daisies), Borage , violets , polyanthus, Day lily, lavender , pineapple sage , rose , nasturtium, pumpkin , zucchini and many others including many nectar filled native flowers.

#### GARDEN POT- POURRI- some ideas:

Australian garden mix 1.

Dried leaves of Native mint bush, Lemon scented gum and Tea-tree,

Flowers of Boronia and native daisies.

#### Garden mix no 2.

Old fashioned fragrant Rose petals

Lemon verbena

Lemon and Rose scented Geraniums flowers and leaves

Lavender foliage and flowers.

Dried Rock Rose leaves or

Crushed dried root of Iris Pallida (orris root powder) could be added to any mix as a natural fixative.

Essential oils could be added for extra fragrance bought or home distilled.

Any flowers with your favorite fragrance can be used to make perfumes, flavored oils or vinegars for cooking with .

Basic Method: Fill a jar with ,for example, Jasmine flowers add a tablespoon of light pure olive (or other bland oil) fill the rest of the jar with Brandy (or other alcohol source such as rubbing alcohol) tightly secure lid .

Keep jar in a warm place for six weeks .

Shake well before using.

Plant uses references; Jackie French 's numerous articles and books .

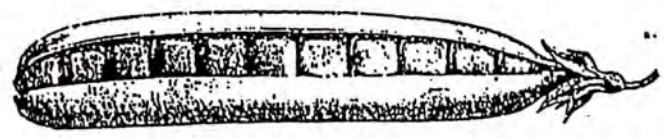
e.g. "The A-Z of useful plants , from after shave , cough mixture ,glue and shampoo to tranquilliser, spices and wine . ." Jackie French Aird Books 1990.



WINTER AND SUMMER SOLSTICE

Winter Solstice-- the shortest day occurs 21 June, a good time for a Winter festival, in Melbourne the Sun will be at its lowest midday angle from the horizon at 28 degrees. This can be wisely taken into account if deciding where to place trees, windows and eaves to gain the most benefit from the Winter Sun's warmth and light.

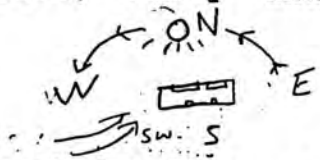
Summer Solstice - occurs on the 22 December, is the longest day of the year, and is claimed by many, to be the Secular precursor to the now celebrated Christmas day. In Melbourne the sun reaches its highest midday angle at 76 degrees and similarly this can beneficially be taken into account when designing placement of deciduous trees, pergolas and deciduous vines and so on.



DESIGNING YOUR BLOCK OR BACKDOORSTEP.....

1. Simple site analysis-- work out which areas or sectors receive the most sun, hot and cold winds, rain or rain shadows, consider; views (to block or keep), needs and resources -including time, people, materials, existing and new features, money and knowledge.

Diagram1.



Look at different function and activity areas, map these areas out roughly-- trying different placings and combinations to take into account all factors from step 1. Use lateral thinking; think up any ways of combining or joining different elements of the design - can they go next to, over, under, inside, around, beside up or down each other and in so doing serve more than one function. (some examples are glasshouse attached to house, pond in front of north windows evaporative cooling, relaxation and food supply, guinea pig cage on top of worm farm. or a sandpit for young children next to the clothes line and in view of the kitchen window).

Aim for efficiency in placing areas most used, closest to the house and along the same pathway-- e.g. plucking herbs vegies and flowers for picking along the pathsides on the way to the clothesline and chook house nesting boxes- or whatever arrangement is practical for your particular site and needs.

infinity.....

Step 3. Construction details and Planting Design- placement of trees and companion groups of plants , planning for canopy ,understorey and ground cover planting- - allowing for real dimension of time ,growth and modifications seen to be needed from everyday observation of progress. Placement of screens of vine on trellis or shrub plantings to block views ( of shed compost etc) and or cold or hot winds.

The process of planning your design is most likely of more importance than rigidly sticking to your original plan. The planning doesnt stop with step 3-- The plan on paper is static the real thing is in at least 3 dimensions; with changing weather patterns, yourself and other animals, organised natural chaos, constantly changing and evolving ; in short we are dealing with dynamic living systems .

#### Trees and Buildings and Drains-

General rule of thumb; trees should not be planted any closer than one third of their expected height at maturity. It is easy to find many apparently successful breachings of this 'rule'. The age and type of building materials used in house and drain construction also influence planting choices. The following trees are among some of the trees with particularly vigorous root systems which are definite trouble near buildings ; Fig, Elms, Ashes, Poplars, Willows , Pepper tree, Lilly Pilly, and some species of Eucalypts. Paths near large trees , unless cracks are desired, are best made out of some sort of flexible materials such as; sand, gravel or mulch. ( Hard wearing paths that can be moulded over undulating surfaces can be made with second hand pieces of asphalt that have been ripped up from old paths or roads.

In the vine department; the broad leaved common Ivy exudes a substance from its roots that can eat into mortar between bricks, and under Australian conditions tends to grow too rampantly and at least need alot of not so tender loving care. This is not to overlook the many benefits of growing vines on south walls ( or trellises adjacent to these walls) -- vines by the actions of their leaves turning to and away from the sun and by transpiring moisture, create a modified buffered climate around themselves, and thus the surrounding area. They also serve well as a buffer against the extremes of hot and cold breezes.







**Seed Suppliers.**

Phoenix seeds P.O. Box 9 Stanley Tas. 7331.  
New Gippsland Seed Farm P.O. Box 1 Silvan Vic 3795.  
Eden seeds. The Finch Family. M.s. 316, Gympie 4750  
West Australian Wildflower Society. P.O. Box 64 Nedlands W.A.  
SEED SAVERS NETWORK> P.O. Box 975 Byron Bay NSW 2481.

**Companion Planting Charts .**

`Earthkeepers` lot 1 Addison st. thirlmere NSW 2572. ph 046 819 623

Bottles and jars for your preserved surplus-

Bottle containers Pty. ltd. ph: 584 2335 Chaunton drive Cheltenham Vic

Garden advisory Service. Dept of Ag. ph 819 4422

H.o.p.e. Household Options to protect the environment.

HOPE Victoria RMB 1596 , Mansfield 3722 (ph 057 752 988)

Permaculture International Journal Subscriptions-/ memberships-

P.O. Box 7185 , Lismore Heights NSW 2480.

Permaculture Melbourne Ph; (Christine or John 499 4. )\*

Simply Edible gardens- limited specialist nursery stock,

Permaculture design , consultation and courses Paul Fletcher ph: 459 7996.

Resource list for Organic growers- Michael Porcher P.O. Box 73 Gisborne  
Vic.3473

Organic Gardening Calendar- Southern Holdings P.O. Box 6 Hounville Pty Ltd.  
7109

Ready made Nest boxes for native animals- `Enviro-nest` Fadersons Rd.

Mandurang 3551

ph: 054 395710

Environment equipment- Waterless Composting Toilets. 1/32 Jarrah Drive  
Braeside Vic.3195

ph: 587 2447 fax 587 2082

Energy Victoria - information on energy conservation /design . 139 Flinders  
St. Melbourne 3000

ph: 650 1195.

Landcare,( CF+L ) 240 Victoria pde. East Melbourne. Vic. 3002.

C.S.I.R.O. Bookshop . 314 Albert st. East Melbourne 3002.

Vi-trex. Bird seed, grain specialists (some home delivery) 19 Mephan St.  
Footscray 3011

ph: 317 3122 fax 317 3336.