

Carow With Nature



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GROW WITH NATURE

An Introduction to Permaculture and the Inspiration
behind the Forest Garden at Nature's World,
showing how we can begin to take responsibility for
the earth's resources that we use

by

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This will be regularly updated as work progresses.

Permaculture has emerged as a response to disillusionment with conventional farming methods. Modern agriculture exists on a one field/one crop basis, heavily dependent upon chemical fertilizers and pesticides. These 'monocultures' covering a large part of the earth lie outside of its life support systems since they are designed to exclude all life forms other than the particular crop.

Ecological scientists over the last century have determined that the key to the maintenance of life on earth is the relationship that exists between different organisms and between organisms and their environment. Each organism consumes energy and matter provided by other organisms and will in turn change this to a form that can be consumed by others. This is the great cycle of life where, as you are reading this, there is an infinitely complicated system of chemical and physical reactions occurring maintaining the machinery of life.

This system is at its most productive and healthy state when there is the greatest variety of lifeforms. This fact was recognised at the United Nations Earth Summit in Rio, 1992, when the worlds largest inter-governmental meeting signed the biodiversity convention. This was an undertaking to conserve the diversity of life on earth. Each signatory country and each local council within them has an obligation to produce a strategy to meet this and other ecological aims. Known as Agenda 21, the ultimate aim is to safeguard a self-sustaining life support system that provides for its own constituent parts.

If we can emulate this system by carefully selecting a wide variety of species, it may be possible to provide a self supporting system of food production requiring a minimum of human intervention - ie relying on Nature to do the work for us.

A forest garden is one such self-supporting system.

In 1994 here at Nature's World a few volunteers with similar interests got together to create a forest garden using permaculture design as a tool. This booklet explains a little about permaculture, forest gardening and our approach at Nature's World.

Firstly, why is permaculture important? Anyone interested in learning more about problems facing our society today especially related to sustainability can read numerous books on, for example, the car problem, sewage and waste disposal techniques, the biodiversity issue, the poverty trap to name but a few. Permaculture offers us real solutions to these issues and more importantly solutions that are not imposed upon us but solutions that we decide upon. In fact, it is difficult to stand back when you can see how a community could benefit from permaculture design. But as a permaculturist you should go only where you are asked!

Thus, permaculture is not dogmatic; nor is it new. Rather, it is a practical way of acting positively today. Since being involved in permaculture for a number of years, we have found many people using its principles in and around their homes without knowing the permaculture literature. Initially, in the seventies, the first permaculture designers decided they wanted a practical way of building communities now, that "both cared for the earth today and for future generations". The phrase in inverted commas is a common addition to policy statements made by governing bodies and sounds quite impressive. The difference here is in the words used preceding the phrase, namely a "practical way" and "now". Hence, some practical task is accomplished at all permaculture gatherings to improve the site of the gathering.

So, permaculture offers those of us caught up in consumerism and the destruction of the quality of our environment a forum for developing our own ideas towards sustainable use of resources. This booklet only touches on permaculture design and forest gardening. But, maybe the slimmest books can give us the greatest wealth of ideas!

And finally, a guiding rule in permaculture is to garden. So, happy gardening!

WHAT IS PERMACULTURE?

The most comprehensive definition of permaculture (a term first coined by B. Mollison in 1970), is probably that used in the British Permaculture Magazine:-

“The conscious design of an ecologically sound future, co-operating with nature and caring for the earth and its people.”

In the PAST:- Primitive agriculture was based on nature and provided basic needs using few non-renewable resources but was very labour intensive

At PRESENT:- Our needs are met by non-renewable, high energy consuming systems with little thought for the long term care of the earth, its plants, animals or people and with little sharing of resources world wide.

In the FUTURE (?):- Permaculture takes a mixture of new technologies and old traditions together with observation and the use of natural conditions and systems.

Permaculture is:-

Designed:- Nature is observed. Relationships between plants and the landscape are taken into account. Inherent qualities and natural characteristics are used and many apparent disadvantages can be turned into advantages. It is working with nature to produce a design system with maximum output for minimum energy input.

Diverse:- Everything performs more than one function and each need is supplied by many different elements in the design. It is an interactive system of polyculture where relationships are built to assist healthy growth of the system.

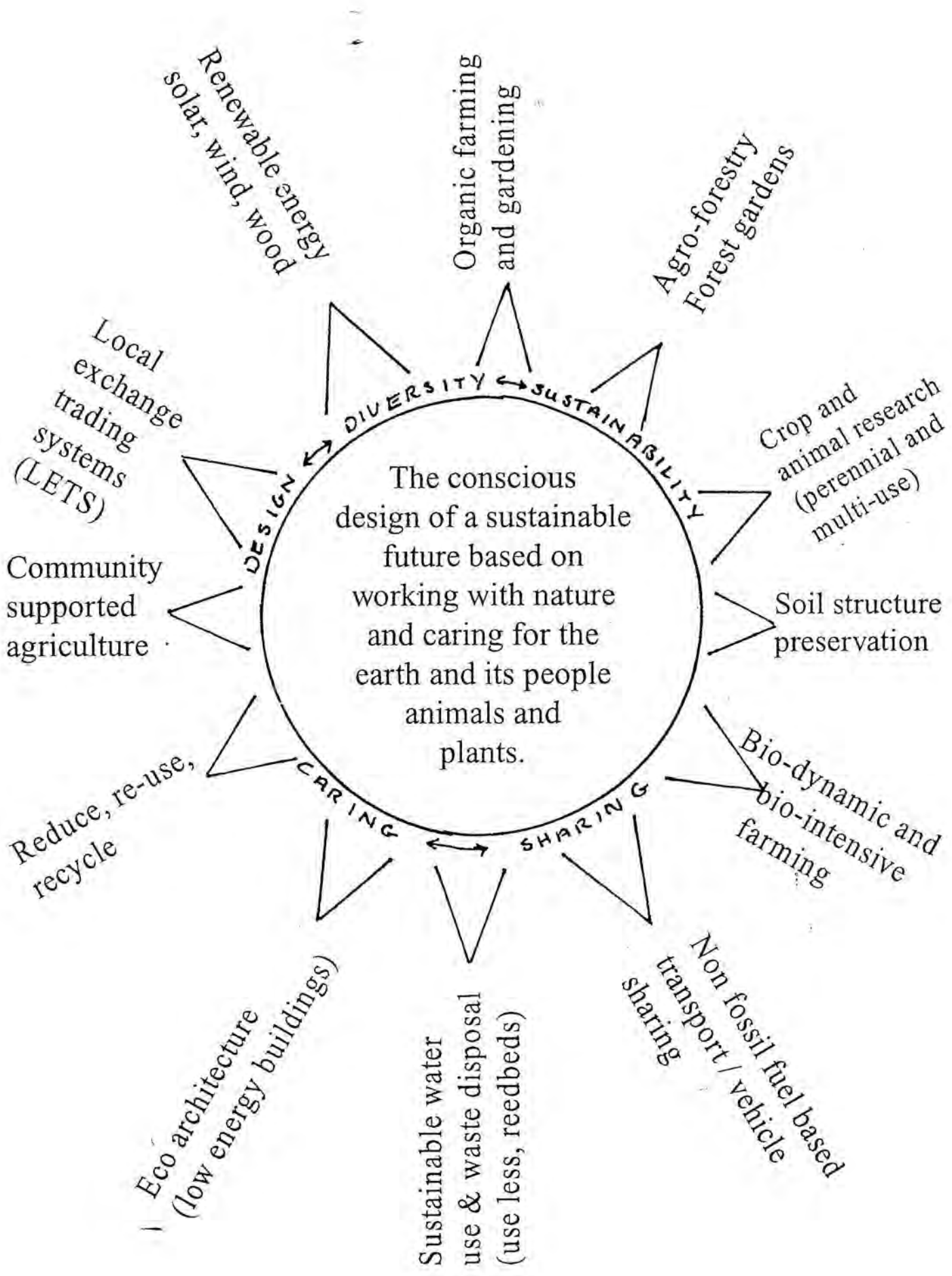
Sustainable:- It is energy efficient by reusing, recycling and using renewable energy and abundant natural resources, leading to systems where energy is supplied from within the system with no exploitation or pollution (energy loss). It is energy saving by planning of locations within a system, by small scale intensive systems and by local production reducing transportation.

Caring:- It cares for the earth and all living things, recognising their worth regardless of usefulness. Thoughtful observation and design replaces constant labour and exploitation whilst people's, animals' and plants' needs are taken into consideration when designing a system.

Sharing:- Each takes only his or her needs and surpluses, in time or produce, are given away.

So permaculture is a flexible system, using resourcefulness and self reliance, taking into account local conditions and people's wishes without unnecessarily degrading or harming the earth, its plants and animals but working with nature.

Thus permaculture can be practiced to some extent anywhere, from window boxes, patios and back gardens to farms and estates. There are no specific techniques that have to be used in permaculture, people using it in the UK are involved in organic gardening and farming, forest gardening and agroforestry, local exchange trading systems and community supported agriculture, eco-architecture, sustainable transport systems, reusing and recycling, renewable energy sources (sun and wind) etc - it is all our conscious efforts towards taking care of our earth and its living dependants, plants, animals and people now and in the future as we fulfil our needs and wishes.



WHAT IS A FOREST GARDEN?

The basic principle of a forest garden is a multistorey planting of a wide variety of species that grow in harmony and help together. It is like a natural forest but consisting of fruit and nut trees and bushes, herbs and vegetables. In this edible forest each plant has many uses and each need is supplied by many plants.

Like a forest it should be a stable, self-perpetuating and self-regulating habitat and thus the plants used are:

- Perennial or self-seeding - little annual planting
- Self-fertilizing - deep-rooted to draw up minerals, or nitrogen fixing
- Self-watering - deep-rooted to draw up water
- Self-mulching - fallen leaves and weed-suppressing, moisture-retaining herb ground cover
- Self-pollinating - self-fertile and flowers to attract insect pollinators
- Self-healing - aromatic plants to deter pests and diseases and encourage pest predators
- Pest and disease resistant - diversity to prevent epidemics, resistant species, species suited to locality

The three main principles are:

1. **PERMANENT MULCHING** of the soil with hay/straw/leaves or green manures or a herb ground cover, the soil remaining undisturbed by digging.
2. **MULTIPLE CROPPING** using up to seven layers ie; canopy, trees, shrubs, herbs, ground cover, rhizomes and creepers, to utilize all vertical as well as horizontal habitats.
3. **AROMATIC PLANTS** to aid growth, discourage pests and disease and encourage natural pest predators.

This leads to a system in which basic needs can be grown with minimum energy input and with maximum help from nature, but it is also a system that can be adapted to and works with local conditions and needs, that is designed to take into account the 'lie of the land' and community needs.

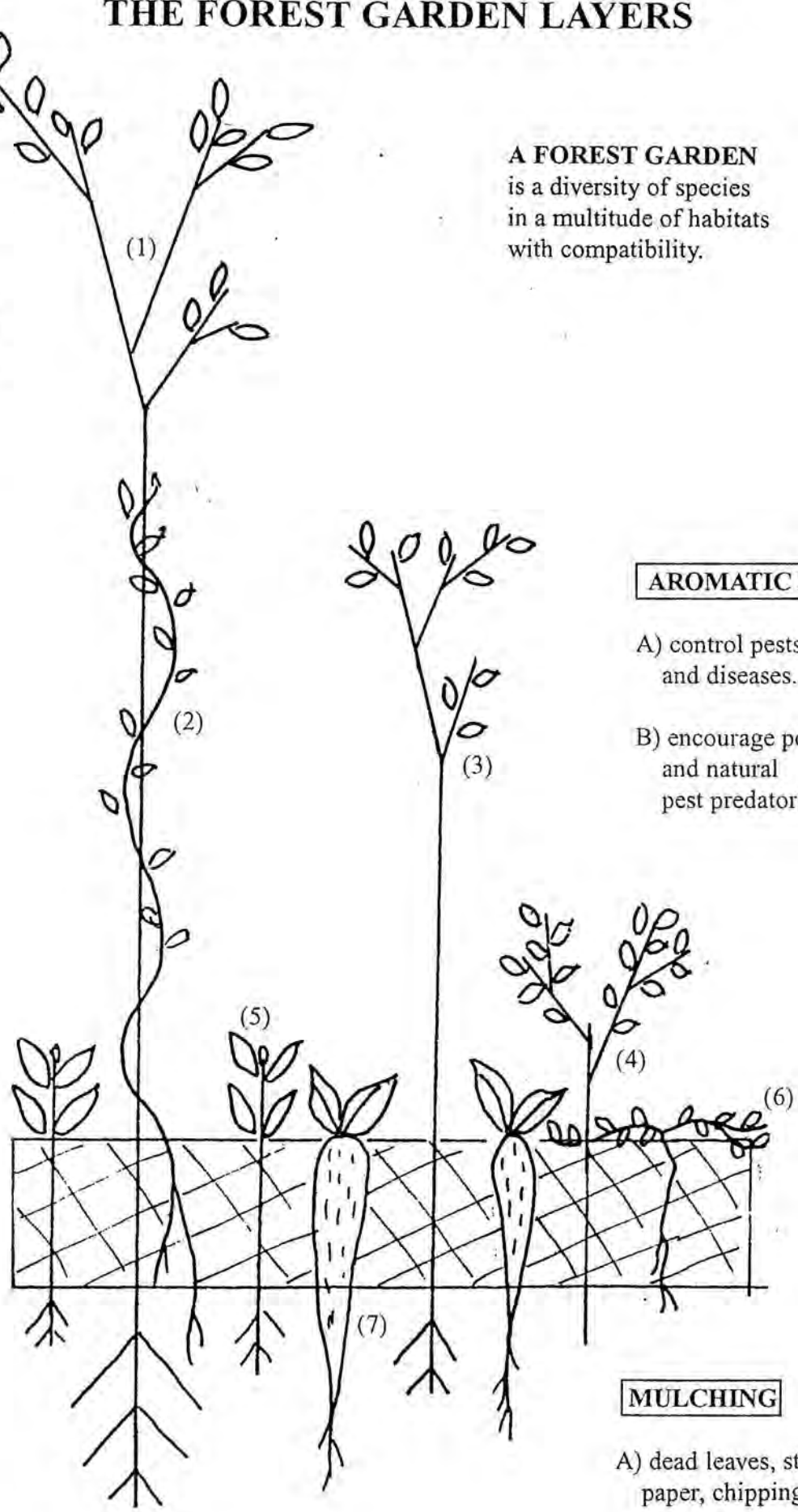
So within the basic Forest Garden structure can be included any of the following:

1. A shelter belt or hedge for protection which can also provide wood, fruit, nuts, wildlife cover and herbs.
2. An open area for sun-loving vegetables, flowers and herbs.
3. A large tree area to provide wood for use in the garden and for heating and for wildlife cover.
4. A wildlife area, undisturbed to encourage beneficial animals, birds and insects.
5. A willow coppice to produce baskets or to shred for compost or to feed to goats.
6. A wetland area for water-loving plants and beneficial reptiles and birds and, if large enough, as a reedbed system for water purification.
7. A container area, on a patio, near the door or on a windowsill for frequently used herbs and salads and as a seed and cutting raising and holding area.
8. Increasing the amount and use of 'edge' areas which are most diverse in species eg; edges of clearings, ponds and paths.

A FOREST GARDEN
is a diversity of species
in a multitude of habitats
with compatibility.

MULTIPLE CROPPING

- 1) canopy
- 2) climbers
- 3) trees
- 4) shrubs
- 5) herbs
- 6) ground cover
- 7) rhizomes



AROMATIC PLANTS

- A) control pests and diseases.
- B) encourage pollinators and natural pest predators.

MULCHING

- A) dead leaves, straw paper, chippings.
- B) green manures, close planting of herb layer.

THE FOREST GARDEN AT NATURE'S WORLD

The basic ideas we use at Nature's World:-

- Observe the area
- Design
- Work the area
- Observe
- Go with nature - do not fight the natural tendencies of the area

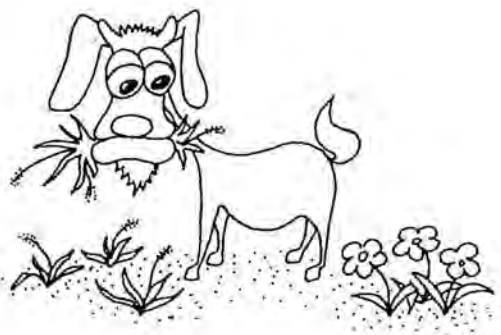
The problems we started with:-

1. No drainage, very wet in winter
2. Clay soil, been overworked
3. Major weed couch grass
4. Very little shelter on the area

1. There is no drainage so we have dug drainage channels to direct water falling on the forest garden site to where we want it, ie; the lowest point where we have sited the pond. We have been careful not to lose the water from the site; water is a great asset for growing healthy crops in the UK.

2. The clay soil has properties such as being able to store water in drought periods. Also, together with humus, clay provides the sites where nutrients are stored and released to plants. We will keep a ground cover and not cultivate in wet weather to prevent cracking in dry weather and to prevent breaking down the structure to a sticky mess. Remember, compared with most countries in the world, clay soils in the UK are a great asset and provide a superb very fertile growing medium.

3. Couch grass can be an asset as a liquid feed (like comfrey) and as a medicine for animals and humans. But obviously our edible plants need space for light, water and minerals too. So we are mulching the couch area and growing potatoes on it. Potatoes have been traditionally used in the rotation of crops to reduce weeds. However, we do realise it will take a long time to control the couch levels to where it is an asset, so in the meantime we are also cutting the couch to use as a mulch and to feed the goats and poultry while that in the mulched hedgerow is proving possible to control by regular pulling.



BRIGID.

4. Little shelter means we can create the shelter we want, like the hedgeline already planted in a convoluted way to provide a greater edge. Hedgerow herbs have been planted to provide diversity of species.

5. There are other, mainly annual, weeds on the area such as chickweed, speedwell, nettle, forget-me-not, sow thistles, mayweed, polygonums etc which we are using as a natural ground cover/green manure. They all have their uses as a food or as a medicine if the site is used to its potential but here we are using them to augment the broadcast green manure of phacelia, alfalfa and trefoil to save on seed buying - each weed has a use in rejuvenating the soil.

The next step:-

Our aim is for the main area of the forest garden to be planted with fruiting trees and shrubs of various heights. Fruit trees are expensive. Initially we are buying four standard fruit trees for the upper fruiting layer and we have rescued twelve fruit trees of unknown type from the plant sales area. These, together with others that we will graft from the numerous varieties already at Nature's World, will form the framework of our forest garden. We hope eventually that members of the public will adopt our fruit trees.

This garden was started in March 1994 using the principles of permaculture by reusing old tyres, courtesy of North Eastern Tyres.

This reusing of a resource both reduced wasteful landfilling and created a range of habitats in which to sustain a multifunctional food bearing garden containing herbs, vegetables and fruit.

The community was involved as most plants and seeds were salvaged from our own or visitors' gardens or from other nurseries, nothing is refused, everything has its use. Gardeners contributing included children and mentally and physically handicapped people.

Seed has been collected for future use and cuttings will be taken for further propagation to produce plants for the forest garden.

The design of the tyre garden includes:-

A pond for watering, as an attraction and for beneficial wildlife (spot the frogs of different sizes).

Glass tops used on the tyres to produce cloches to bring on plants and seedlings in the spring. Being black the tyres also absorb heat well.

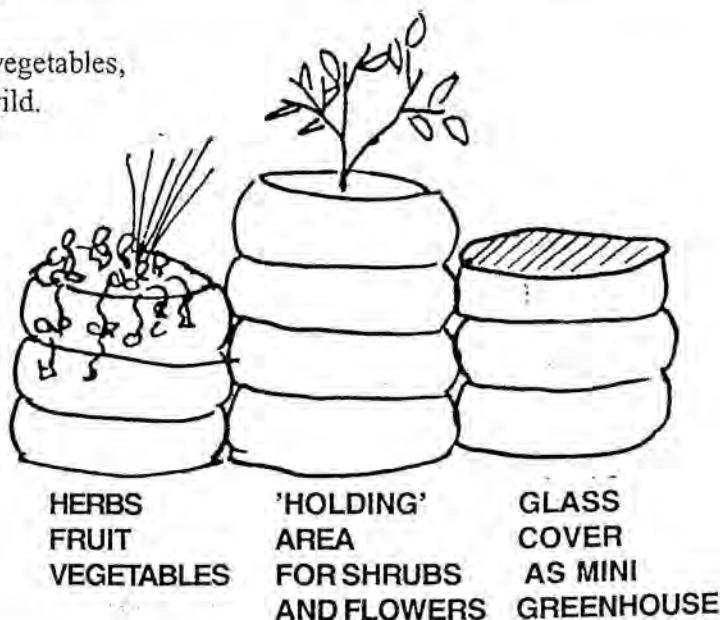
Tyre compost bins and some with green manures or comfrey for fertility.

The soil in the tyres is mulched to reduce water loss and retain fertility, unwanted weeds are cut and used as mulch also.

Where acceptable, wild plants (weeds) are allowed to grow as these have many beneficial uses as foods, herbs, medicines or simply green manures.

Thus the tyres contain a mixture of herbs, vegetables, fruits, shrubs and flowers, both garden and wild.

Can you think of other uses for the tyres in our garden?



The tyres presently contain:-

HERBS: Comfrey, Chamomile, Salad Burnet, Sage, Mint, Lemon Balm, Phacelia, Tansy, Fennel, Parsley, Marjoram, Chives.

VEGETABLES: Spinach, Onion, Globe Artichoke, Cabbage.

SHRUBS: Japanese Walnut, Japanese Pepper, Ribes odoratum, Viburnum prunifolium.

FRUIT: Strawberry (large and alpine), Raspberry, Gooseberry, Blueberry, Rhubarb.

FLOWERS: Gypsophila, Rose, Sunflower, Balsam, Nasturtium, Fuchsia, Honesty, Jacobs Ladder.

SUMMARY

PERMACULTURE

Permaculture is a planned but flexible way of living that works with nature and takes into account peoples' needs and wishes but does not harm or degrade the earth, its plants and animals. It is a mixture of old traditions and new technology. Indeed, there are very few specific techniques that have to be used in permaculture. It is rather a question of conscious design, choosing the techniques and features that suit your individual set of circumstances (site). One way of using these ideas is a Forest Garden.

FOREST GARDEN

A Forest Garden is really an edible forest where a wide variety of trees, shrubs and plants of many sizes and species that grow well together and help each other are used to provide food and other needs. The soil is mulched, using dead leaves, chippings, compost etc or with green manures so there is little digging or weeding and the ground keeps its moisture and natural fertility. A wide variety of perennial or self seeding plants of all sizes are grown to make use of all habitats and prevent epidemic diseases so there is little annual sowing or need for pesticides. Aromatic plants are grown to deter pests and diseases and encourage helpful predators and pollinators. Nitrogen fixing and deep rooted plants are used to produce or draw up nutrients so that artificial fertilisers are not needed. But most importantly, it is a planned system which uses minimum energy input with maximum help from nature and minimum pollution of the environment and that can be adapted to local conditions and needs.

THE FOREST GARDEN AT NATURE'S WORLD

Turning negative features into positive assets is a feature of permaculture. In the Forest Garden at Nature's World, features such as no drainage and a clay soil might be considered negative but we have created our own drainage in the hedgline enabling us to direct rainwater to where we want it in the Forest Garden. The clay soil will retain water and, together with humus from mulching, will provide sites for exchange of minerals with plant roots. Provided the soil is not worked when wet, its structure will remain good. In fact it is our aim to maintain a good ground cover after 1995 and just to plant new plants or dig up useful roots.

In summary, the Forest Garden at Nature's World shows you how to achieve a self mulching forest with uses such as food, teas, dyes, wood, basketry, medicine, pleasure and wildlife habitats. Remember to choose the techniques suited to your site.

THE TYRE GARDEN AT NATURE'S WORLD

A further example of permaculture at Nature's World is the tyre garden where tyres are reused, thus reducing waste at landfill sites, to produce a range of containers where herbs, vegetables and fruit can be grown and where plants can be grown for use in or for propagation for a larger garden (ie; the Forest Garden).

Review of some Forest Garden and Permaculture Literature. 11

There are many books relevant to Permaculture and Forest Gardening, for example:

“The Natural Way of Farming” by Masanobu Fukuoka (Japan Publications, Tokyo and New York 1985).

“Tree Crops, a Permanent Agriculture” by J. Russell Smith (The Devin-Adair Company USA 1950).

“Water for Every Farm” by P.A. Yeomans (Second Back Row Press Pty Ltd, Katoomba Australia 1981).

“Forest Farming” by J. Sholto Douglas and Robert A de J Hart (IT Publications 1976).

“Forest Gardening” by Robert A de J Hart (Green Books, Devon 1991).

In the last three years British authors have published books specific to permaculture, for example:

“The Permaculture Way” by Graham Bell (Thorsons, London 1992).

“Urban Permaculture” by David Watkins (Permanent Publications, Hampshire UK 1993).

“Permaculture - a bit about it” by Steven Read (Permaculture Association) - a good booklet for only £1.50.

Other books worth buying are:

“Permaculture in a nutshell” by P. Whitefield (Permanent Publications 1993) at £4.50 - Good points are, a cheap, brief introduction, well written and very easy to read. Limitations include a couple of different interpretations of permaculture, for example the third permaculture ethic is described as 'fair shares' rather than giving away surpluses.

“Introduction to Permaculture” by B. Mollison (Tagari Publications, Australia 1991) at £12.95 - A thorough introduction to the subject edited by Reny Mia Slay sourced from “Permaculture 1” and “Permaculture 2” and “The Designers Manual”. The main limitation is the cost though well worth it for the enthusiast.

“Permaculture, A Designers Manual” by B. Mollison (Tagari Publications, Australia 1988) at £29.95 - A detailed handbook based on Mollison's years of experience and useful as a reference. Limitations are its cost and it is not an easy book to read for beginners. A book for serious Permaculture designers who should scan it before buying.

“The Forest Garden” by Robert A de J Hart (Institute for social inventions, London 1990) at £3.25. A cheap well written book describing the setting up and principles of Hart's Forest Garden in Shropshire. A good introduction to small scale agroforestry like forest gardening and an inspiration to us all!

“The Permaculture Garden” by Graham Bell (Thorsons, London 1994) at £9.99. Good buy for the beginner practicing in the UK, many useful tips and good species list, but serious designers may want more detailed information.

Books are available from most book sellers, to order and from Permaculture Publications.

If you fancy visiting Permaculture sites around the UK look at:

“The Permaculture Plot 1994/95” by Simon Pratt (Permanent Publications 1994).

If you are interested in learning more about the forest garden project at **Nature's World** or would like to join the forest garden volunteers on one of our work days, please contact Nature's World on (01642) 594895 or Anne Press on (01642) 723086.

Other useful addresses:

The Permaculture Association (Britain), PO Box 1, Buckfastleigh, Devon, TQ11 0LH, Tel: (01892) 825049.

Permanent Publications, Hyden House Ltd, Little Hyden Lane, Clanfield, Hampshire, PO8 0RU - publish Permaculture Magazine, £10 for 4 issues/year.

HDRA - Ryton Organic Gardens, Ryton on Dunsmore, Coventry, CV8 3LG Tel: (01203) 303517.

Clive Sims, Woodhurst Essendine, Stamford, Lincolnshire, PE9 4LQ Tel: (01780) 55615 - unusual tree and shrub nursery, (mail order only).

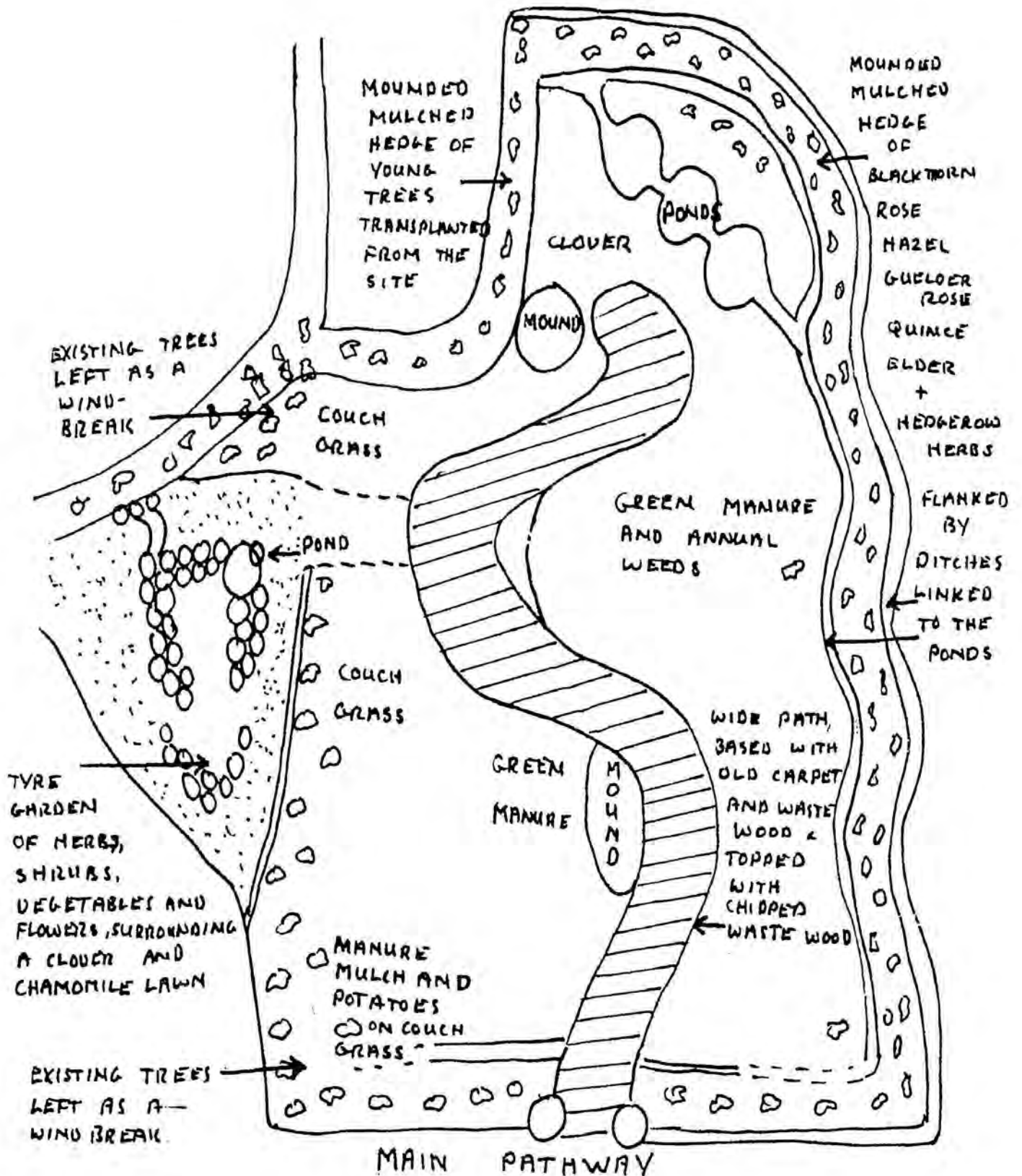
"Agroforestry News", Ed. Martin Crawford, Agroforestry Research Trust, 46 Hunters Moon, Dartington, Totnes, Devon, TQ9 6JT. £16 for 4 issues/year. An excellent journal for details of forest gardening, including species, varieties, rootstocks, grafting etc.

"Intermediate Technology", IT Publications, 103-105 Southampton Row, London, WC1B 4HH - useful for books and Information Officer IT, Myson House, Railway Terrace, Rugby, CV21 3HT for information.

Your Own Ideas?

FOREST GARDEN AT Nature's World

DECEMBER
1995





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Working Together for
a Better Environment