

Permaculture Network In Malawi

Issue # 54: Design

Jan-March 2007

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Web Design

By Kristof & Stacia Nordin

If you have access to the internet, check out our webpage on Permaculture and Nutrition in Malawi.

You can find it at www.NeverEndingFood.org

The website highlights Permaculture and nutrition activities that are happening throughout the country – and we are always updating it.

There is information on the Permaculture Network in Malawi, along with articles and resources for you to download, such as back issues of the Permaculture Newsletter and Malawi's Low Input Food and Nutrition Manual.

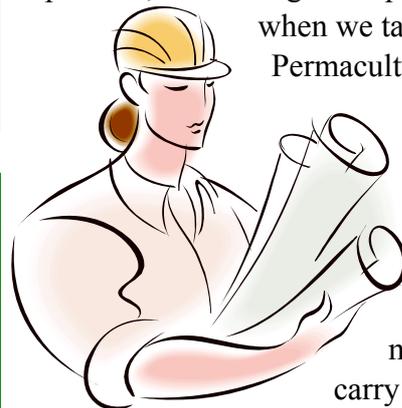
Check it out and let us know what you think!

Thoughtful Planning

Rather Than Thoughtless Labour

One of the most important concepts in Permaculture is that of “*design*”. Good design will help you to use your resources to their fullest potential, reduce your energy, reduce waste, protect the environment, and increase the productivity of your systems. It will also help you to avoid a lot of additional work in the future. For instance, it is much easier to plant a tree in the correct spot when it is a seedling than it is to try and move it when it is old and established.

The definition of “*design*” is, “to conceive in the mind, to form a plan for, to have a goal or purpose”. This is exactly what we mean when we talk about applying design to



Permaculture. The more that you can see the bigger picture in your mind, the more likely you will be able to implement it. The better thought out that your plan is, the more likely it is to succeed. And, the more clearly that you make your goals or purpose, the more likely it is that your efforts will carry on well into the future—this is the purpose of Permaculture.

Good Permaculture design isn't just concerned with how we grow our food, it also looks at how we use *all* of our resources. Good design can be applied to harvesting rainwater from our rooftops instead of pushing it off our land. It can be applied to creating swale systems along our roadsides to prevent erosion and replenish the groundwater table, instead of hoeing up all the organic matter and creating more problems for ourselves. It can be applied to the houses we live in and the buildings we work in, making the most of wind direction, seasonal sun patterns, natural lighting, reusing grey water, and even in the use of more sustainable energy sources (like solar, wind, wave, hydrogen, biodiesel, biogas, etc.)

There are a lot of things to consider when thinking about good design. This issue of the newsletter will take a look at some of these things and hopefully give you some new ideas of how you can improve your Permaculture systems. 

Permaculture Network News

Chaka chabwino kwambiri ku Chikhalidwe Chosata! (I'm making up my own Chichewa here!). What a great year this has been for the Permaculture! Permaculture is gaining recognition at all levels. In the next newsletter I hope to have the Permaculture Network directory ready for print and you can link up better with other members. In the meantime, this issue has a few pages devoted to various letters we've received from members (see pages 8-10). Here are some other exciting things happening:

- ✔ **Ministry of Education** is testing Permaculture in 40 schools in 8 districts and many Permaculture Network members are involved: Pastor Chawawa (LL), Stacia & Kristof Nordin (LL), Chris Walker (BT), Leiza Dupreez (RU), McJustice Betha (CK), Caroline Wilkins (NB) – and we are even gaining members along the way! I'll add an update in one of the newsletters so that you can link up.

- ✔ **Regionally, The Regional Schools and Colleges Permaculture Programme (ReSCOPE)** is setting up their head office in Blantyre. MoE's School Health and Nutrition Coordinator Dorothy Khonje and the Permaculture Network's Stacia Nordin both sit on the Regional Board.

- ✔ **Internationally, the British Permaculture Association** has sponsored 8 Malawians to receive their quarterly Permaculture Magazine and we are in discussions with them about other ways to improve access to information.

- ✔ **The 8th International Permaculture Conference (IPC-8)** and the British Permaculture Association have teamed up to sponsor one Permaculture Network Committee member to attend the conference, convergence and field visits from May 16 through June 6 2007 in Brazil. The network committee selected Patterson Majonanga to attend. On his return to Malawi he will organize a nation-wide Permaculture Malawi meeting, among other activities.

Patterson will be presenting information in Brazil at IPC8 on what is happening in Malawi with Permaculture. If you want your information to be included in the presentation, please send him (or the newsletter editors) information on how you use Permaculture by the end of April.

Permaculture Network Committee Contacts

This committee is still 'interim' (temporary) until we get our constitution finalized and the membership has the chance to vote on the positions. In the meantime those of us guiding the direction of the network will strive to do the best we can to improve the systems. Thank you, Stacia Nordin, Newsletter co-editor

Position	Name	Contact information
- National Coordinator	Leo Kuwani	Box 54, Migowi. 09-280-429
- Admin Secretary	Patterson Majonanga	MOET, Box 328, Mangochi. 08-873-270. 01-580-063. moetmwcharity@yahoo.co.uk
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- Northern Coordinator	Leiza Dupreez	Lukwe Permaculture, Box 20, Livingstonia. 08-585-880; earthcare@africa-online.net
- Central Coordinator	Pastor Joseph Chawawa	Chisomo Orphanage Widow and Education Care Ministry PO Box 40630, Kanengo, LL4. 09-371-627
- Southern Coordinator	- To be a coordinator you need to be a Permaculture role model, to be an advocate, to organize members in your region, and to have reliable communication -	
- Patron	June Walker	Thanthwe, Box 46, Monkey Bay. 01-587-656. 08-832-305. junewalker@Africa-Online.net

How Do I Get Started?

By Kristof Nordin

Many people who see Permaculture for the first time want to try it for themselves, but often don't know where to start. One of the greatest things about Permaculture is that you don't have to have a background in agriculture to practice it. It is something that anybody, at just about any age, and just about anywhere in the world can do. So here are some tips for getting started that may help:



Choose an area to start—We often recommend that people “start small”. Selecting a small area to begin will help you to heal the soil more quickly and experiment with new ideas. Try to pick an area that won't be disturbed in the future by sweeping, burning, construction, etc. Maybe you want to start in the area around one established tree, or in the runoff water from a bathing area/borehole, or pick just one or two rows in a typical maize field to try some of the Permaculture principles. I think you'll be surprised at the results.

Assess the area that you have chosen—Try to take a good look at the area (or areas) that you have chosen and consider what is already there: Is it sloping or flat? Sunny or shady? Wet or dry? Is the soil sandy or clay? Fertile or depleted? Are there already useful plants growing there? Has it been farmed in the past, left alone, swept, burned, etc. All of these things will help you to decide what to do next. Do you start by focusing on making compost and feeding the soil? Or, do you start by protecting the soil from erosion and fixing the problems that have been created by poor land management? Is it the rainy season where things grow easily without additional watering or is it the dry season where you will have to spend more time managing the things that you plant. All of these things should help you to think about the things that you will be planting, when to plant them, where to plant them, and how much energy it will take you to maintain them.

Learn about your plants—Before you plant something in your guild, try to learn about how it grows and the type of conditions that that plant likes. For example is it a climber? If so, is it a heavy climber that could take over a tree, or is it a light climber that could be supported by a small plant like maize? Does the plant like shade? Sun? Water? Dry areas? Is it large? Small? Does it only last one year, or many? Can you grow it from seed, cuttings, root stock, etc? All of these things will help you to determine the right place to put something, when to put it there, and how to take care of it.



What do you want from your guild?—You usually plant a guild to give you things that you like or want to use. First and foremost, consider the food groups: vegetables, fruits, legumes, animal products, staples, and fats. Try to choose a variety from each of these groups (at least the ones you plant—animals can be incorporated into your system at a later date). Also, choose the things you like to eat! If you like mangoes, then plant a mango tree, or two, or three, but first think about the things that a mango tree can give you (i.e. shade, windbreak, organic matter, soil stabilization, habitat for animals, etc). All of these things will also help you decide how to design your area (in other words, where to put the mango tree). Try to do this with each thing that you plant. Ask yourself what job each plant has in the guild: Food, Food for the soil, Digger, Groundcover, Climber, Supporter, or Protector. Then ask yourself how that plant grows and how many uses you can get from it. After all of these things have been thought about, try to choose the best place that will use that plant to its fullest potential.

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Make a Design Map—You may want to make a simple map of the area where you have chosen to start to help visualize the site. You can make this map on paper or, better yet, actually lay out the design map on the ground using broken bricks, sticks, stones or whatever you can find. This way you can easily make changes to the area before you start. Making a map like this can help to save you a lot of wasted energy by helping you decide where to put trees, pathways, water features, guilds, animal pens, etc. Once you have really thought about *where* you are going to put things and *why* you are putting them there, they can then become a permanent feature of your Permaculture garden and you won't have to worry about trying to move them or cut them out in the future.

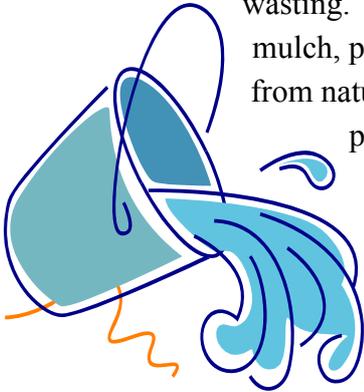


Start!—You can get seeds from many different places. First, try the market—people often forget that foods often come with seeds inside of them. For instance, one papaya can have over 100 seeds inside it that can be planted. You can also plant the seeds from avocados, tomatoes, loofa sponges, mangos, citrus, passion fruit, and other common market produce. The one thing you may want to be careful to watch out for are “hybrid” foods. A hybrid is created when two different plants are combined to create a new plant. In the first year you will often get a plant with what is called “hybrid vigor”, which means that it will grow large and have the qualities of both of the parent plants. The problem with most hybrids, however, is that when you try to save the seed and plant it again they are usually sterile and won't reproduce properly again. So, if you try to plant the seeds of a hybrid tomato from the market it may not do well. This is one of the advantages of choosing local plants, almost all of them give seeds that can be saved and replanted without problems (and for *FREE!*) So, this is the other place to look for seeds—try finding seeds of local food plants (especially towards the end of the rainy season) along roadsides, in abandoned plots, in diverse fields, in forests, and anywhere else that hasn't been ruined by mono-cropping. Many of these seeds can simply be put in the ground, watered, and they will grow! For larger seeds like mangos and avocados you may want to try putting them in your compost pile for awhile. They tend to like the warmth and will germinate and be very easy to move to a guild. Some seeds you may want to start in a small nursery so that you can regulate the amount of water, shade, and sun that they get. You can use any type of container to do this, such as old sugar bags, chibuku boxes, and I've even seen old shoes used. Other plants can simply be cut, stuck in the ground, and they will grow. These are known as “cuttings” and “truncheons”. Sweet potatoes and cassava are examples of these. There are even trees that you can cut and plant entire branches of and they will continue to grow. These can be used to establish live fences, animal pens, or boundary areas. Some plants can be split from the roots and planted such as lemon grass, tubers, and bananas. Remember that there is a lot of knowledge in the area that you live. Try to ask people, especially the older people, if they know how different plants grow and how to start them. Trying different things will help to add variety to your guild as well as help to give you confidence in different methods of growing your foods.

Don't be afraid to make mistakes—Some things won't work for you the first time around. It is part of the *Nature Cycle* that some things grow while other things die. So if some of your plants don't make it, you can keep trying new things until you find the things that do work. You may want to try plants in different areas, or try different plants together, or try different combinations of a guild. I remember when we first started I used to get very discouraged when a dog would dig up some of the plants in our garden, but now we just fill the hole with compost and plant a tree and protect it. Try to see the solutions and not the problems. The more diversity that you can add to your guild and the more wildlife (i.e. birds, bugs, frogs, lizards, etc) that you can attract to the area the more likely it will be that it will regain its natural balance. Once the balance comes back, it is much less likely that you would see problems like pests, diseases, and the effects of drought or flooding. With the added advantage that you will eventually be getting food to eat every day of the year! 🌍

Reduce - Reuse - Repair - Recycle...Design

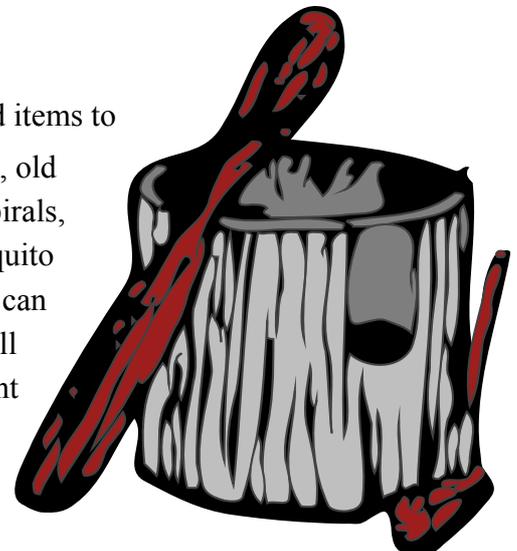
Reduce: Good design in Permaculture tries to look at reducing anything that might be wasted. This includes trying harvesting all of your rainwater and the rainwater that your neighbors might be wasting. This can be done with the use of swales, pits, channels, ridges, tanks, pots, mulch, plants, and many other ways. Also, try to *reduce* the things that don't come from nature or that damage the nature cycle—things like plastics, chemicals, and poisons. These things end up polluting the environment and weakening the natural systems that we rely on for our food, medicines, building supplies, and many other things. You can *reduce* the use of these harmful things by using cloth bags, shopping in the open market to avoid plastic packaging, by growing things organically, and by using integrated pest management techniques.



Reuse: Good Permaculture design tries to *reuse* things as many times as possible. This is part of using things to their fullest potential. For every piece of the design we need to look at how many uses we can get from each thing. Take a mango tree for instance—the main reason that we might want to plant a mango tree is to get mangos. But what else can we get from a mango tree? Shade, wind break, habitat for animals and birds, medicines, organic matter, soil stabilization, a place to climb or hang a swing for children, income, and more. Before we plant a mango tree in our system we need to think about all of these things and determine where it will be put to the best use. This way we can *reuse* the tree every day for beneficial purposes and eventually also get nice juicy mangos to help improve our health.

Repair: Good Permaculture design also tries to repair the damage that people have done to the environment so that we can leave sustainable and healthy systems for many generations to come. There are many ways to do this: *repair* erosion gullies by planting trees and deep-rooted plants, *repair* soil fertility through the use of composting, mulching, and nitrogen-fixing plants, *repair* the damage that is being done to the foundations of houses from over-sweeping by only sweeping pathways and planting guilds near the house.

Recycle: There are many ways that you can recycle old items to help you in your Permaculture designs. Old tires, broken bricks, old mortars, or broken pots can all be recycled into planters, herb spirals, or other garden designs. Old window screens and damage mosquito netting can be recycled into racks for solar dryers. Old bottles can be recycled to help water plants during the dry season, simply fill them up and stick them in the ground upside down next to a plant or tree seedling, it should slowly seep out over the period a few days to a week and then can be refilled again. 🌍



Always Something to Design with Permaculture!

Boreholes

Boreholes are very common throughout Malawi, with thousands of people using them daily. What happens to all the water that gets spilled or thrown away from washing the buckets? Most of it generally runs down into a pit filled with bricks. Over time this will eventually fill up and cause standing water and the breeding of mosquitoes. Permaculture design shows us that we should be using this overflow water to its fullest potential. So pull up those bricks and build a guild! Choose water-loving plants such as bananas, coco yams, sugar cane, guavas, papayas, sweet potatoes, or others and your work will be done in a single morning of work. The picture you see was planted at the Chitedze Health Centre borehole in about 2 hours and it remained without additional care for over 3 years (until an angry gardener cut it all down).



Terracing

If you are building guilds on very steep sloping areas you may want to try “terracing” to help avoid erosion, soil loss, and runoff. A terrace is made by levelling off areas of earth across a slope and designing ways to hold the earth in place. Terraces lie across the contour of the slope so that the rain water is allowed to “Stop, Spread, and Sink” into the soil instead of running straight down the hill. All pathways are also constructed along the contour or the slope and usually run back and forth throughout the terraces, again to avoid the water running straight down. Terraces can also be reinforced with rocks, or they can be planted with perennial or deep rooted plants such as vetiver grass, lemon grass, pigeon peas, or others. This picture taken at CCAP Likabula, Mulanje, uses a variety of methods to hold its steep terraces in place. *Continued on next page...*



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Windmills—If you live in a windy place you may want to include a windmill in your Permaculture design. Windmills can be made in many different ways and in many different sizes. They can be used to generate electricity, recharge batteries, pump water, or mill foods. This picture is of a windmill in Chileka, Blantyre.



Pathways—Pathways can help to define your guilds so that people don't walk on them and compact the soil. Pathways can also help to reduce the amount of sweeping you do—instead of sweeping a whole yard you can just sweep the pathways into the guilds to help the soil. Even better would be to mulch everything, including the pathways. That way you help to ensure that the soil is building up its fertility and that every drop of rain will be absorbed and enter your soil. In the picture you can see that the pathways have been mulched with peanut shells, which are both practical and beautiful to use. There are no straight lines or right angles in nature, so try not to make your pathways boring. Have them twist and turn, this also helps to create more “edge” where life tends to be more productive. When your guilds grow tall its fun to wander through your forest garden and discover all the new things that nature brings! 🌍



From the Network Members...

DID YOU KNOW?...that the Permaculture Network in Malawi Newsletter goes out to over 1000 people both in hard copy and electronically around the world?

What better way to share ideas with people, network with others, and learn about people in Malawi and around the world who are using Permaculture to improve their lives!

Please feel free to write about what you are doing, what you are thinking about doing, what you've tried, what has worked, what has failed, or anything else about Permaculture or healthy living that you think others may be interested in.

Below we have summarized some of the information that we have received lately from members of the Permaculture Network, people who have written to become members, and even some who will be receiving complimentary copies of the newsletter due to the work that they are doing. We hope this will help to show that we truly are a "NETWORK" of people who care about finding solutions.



Hattly Kelvin Nyasulu, Mzuzu—Mill Supervisor from Mzuzu (near Jenda roadblock)—

Mr. Nyasulu says, "Last year I started a kitchen garden where I grew some vegetables and this year I would like to establish a guild. We have a lot of mill sweepings and grey water that would be recycled for plant growth. On the part of business, it has been found that in neighbouring Zambia customers bring local maize therefore I would like to grow for seed multiplication. Local maize on the sheller does well compared to hybrid maize. Local maize only loses 5% of product to madeya (maize bran) compared to hybrid which has a loss of 10% to maize bran. Again when a customer brings local maize for milling the flour it could last a week while the one with hybrid could come again for milling a second time within a week. I am talking of a family of eight to ten members."



Richard Mzandu, Malamo—Mr. Mzandu writes, "I wish to share with you an interesting story. Here in Malomo we were able to organize ourselves and formed a Permaculture advocacy group called Malomo Permaculture Association. This was in August of 2005 with a broad objective of motivating the Malomo community towards Permaculture. The methodology is through demonstration projects where Permaculture principles and ethics are applied. But, unfortunately the group is collapsing due to lack of technical guidance and in the area of capacity building. This is a very sad development and we need an outside intervention for advice and guidance in order not to miss this opportunity." – **Editor's note: Send in your advice on keeping groups motivated. Does the group really need an outside intervention or is there something they can do on their own?**

Lloyd F. Chinula, Mianga Estate, Thyolo—Mr. Mianga states, "I would like to join the network. I work under Eastern Produce and my area of interest is the establishment and the care of kitchen gardens in the Estate compounds. Also, I deal with Environment management of these areas." – **Editor's note: Welcome to the network Mr. Chinula! Your district is one of the pilot districts for the Ministry of Education pilot Permaculture programme. Be sure to contact Thunga TDC and the 5 schools in the pilot to combine your energies together and synergize!**

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Patsy Colvin, Edinburgh, U.K—Patsy says, “I’m always glad to receive and read the latest from you as it never fails to bring something cheerful and positive from Malawians about Malawi. Much of what is written, especially on the health and nutrition issues dealt with, seems to me to apply to our “condition” here in the UK. In the midst of plenty—super plenty—there’s great need of help in making right and good choices for our well-being. As you can imagine, having lived in Malawi for many years, it’s so enjoyable to see pictures and read about plants, animals, insects and all the garden delights that have been very familiar!” **Editor’s note: Thanks Patsy!**



V.L. Gorath, Tsangano—Mr. Gorath writes, “At the mean time I have extended my fish pond with the idea of rearing more fisheries and I am sure that by the end of the year I shall have to crop a large number of fish for sale.”



Michael Kadango, Mangochi – Communications Officer, Mangochi Youth Advancement Organization. Mr. Kadango states, “The Mangochi Youth Advancement Organization is a community based organization. It carries out different activities to assist the community in food security, sustainable ways of living—Permaculture, and economic empowerment programmes. Our overall objective is to reduce the spread of HIV/AIDS and provide skills in IGAs (income generating activities) through production of vegetables using “keyhole” gardening and livestock rearing in support of HIV/AIDS affected and infected people. We realize that lack of IGAs exacerbate the HIV/AIDS problems in the communities as such we feel that an integrated project is best suitable for the proposed area of intervention. Looking forward to a fruitful partnership in the fight against HIV/AIDS through Permaculture.” - **Editor’s note: It is great to see the links to healthy living! That is how I personally started utilizing Permaculture.**

Seiji Morita, Lilongwe –Project Manager, NICCO (Nippon International Cooperation for Community Development)—Mr. Morita sends the following update on the NICCO project, “NICCO will be operating in Chigwe, Nakutuwa, and Suluwi (Nkhotakota District) from December 2006- November 2008. For the establishment of the security of people’s life especially for food, the implementation of a sustainable food supply system, and the establishment of a new system for sustainable agriculture, NICCO will undertake the following approaches in the target areas:

- Implementing organic farming skills based on Permaculture
- Establishing the production system of the local needs
- Introducing (scaling up*) the eco-san (ecological sanitation) toilet system
- Improving storage for seeds
- Introducing (scaling up*) aquaculture ponds
- Distributing mosquito nets

*** Editor’s note: Eco-san (composting toilets) and Aquaculture were introduced to Malawi many, many years ago and are already being used across the country and in Nkhotakota as well. It is great to see the technologies being spread!**

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Hugh Brown, Mzimba— “Since November of 2002 we have been doing careful trials with the agroforestry leguminous shrub known as Tephrosia Vogelii. In December 2005 we planted maize in some plots on which tephrosia had been growing for the previous three years and the resulting yields have exceeded expectations. The soil we are using is no better than average and in fact the test plots included some stony and gravelly patches. Despite this, the trial rows yielded at the rate of between 7,000 and 9,000kg/hectare, no chemical fertilizer being needed whatsoever. Interestingly, the highest yields were from rows where a zero-tillage system was used.

The maize seeds being planted singly between the sawn off stumps of tephrosia. On all the plots the soil was dug with a garden fork (backwards) between the rows when the maize was about knee high and a mulch of leaves or grass was then applied row by row so that there was no stepping

on the dug soil. Total rainfall for the season was 575mm, November till April and recorded daily. Even after the heaviest downpours we noticed no runoff or puddling, which was in marked contrast to the neighbouring gardens. As a result of the deep digging (up to 25cm) and mulch covering, every drop of rain infiltrated the soil immediately. Very important in this area of low rainfall.

The other thing we noticed is a marked change in the texture and colour of the soil after the year of fallow of tephrosia. For most of that time the soil surface is shaded by the shrubs which can grow up to 2.5 meters tall and the leaf fall coverage is quite thick. It will be interesting to find out whether the absorption of nutrients from the subsoil by the tephrosia plants and the subsequent depositing of leaves on the surface makes any significant difference to the mineral content of the top soil, particularly in respect to acidity which is becoming a serious problem in some of our soils. We discovered that many of the tap roots (*of tephrosia*) had reached a depth of more than one meter.

It should be remembered that continued use of chemical fertilizer alone, particularly Urea, increases soil acidity every year that it's applied, and soil structure also suffers further damage. Nationally, there seems every reason to give this system of organic production further encouragement. We ourselves are now able to make a significant contribution to this as we will soon have in excess of 500kgs of good, clean tephrosia seed available. We are harvesting this seed and would be pleased to supply it at K50 (note: prices may have changed since this letter was written). We need to charge this small amount to at least cover the costs of harvesting which is rather a labour intensive job. Given the serious long-term food shortage that exists and the steadily declining levels of soil fertility, damage to soil structure and its moisture retaining capability, acidity, etc...we seem to have a solution to the problem.” - **Editor's note: Wow! This is great!**



Remember, if you would like to see your projects highlighted here, or if you have something to share with the Permaculture Network that you think others might find useful, please send it to:

Permaculture Newsletter Editors, Stacia & Kristof Nordin

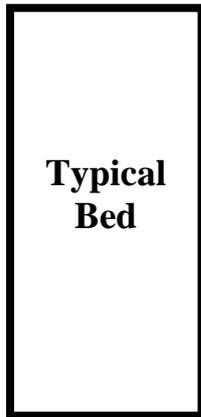
Crossroads Post Dot Net X-124, Lilongwe

or email us at: nordin@eomw.net 

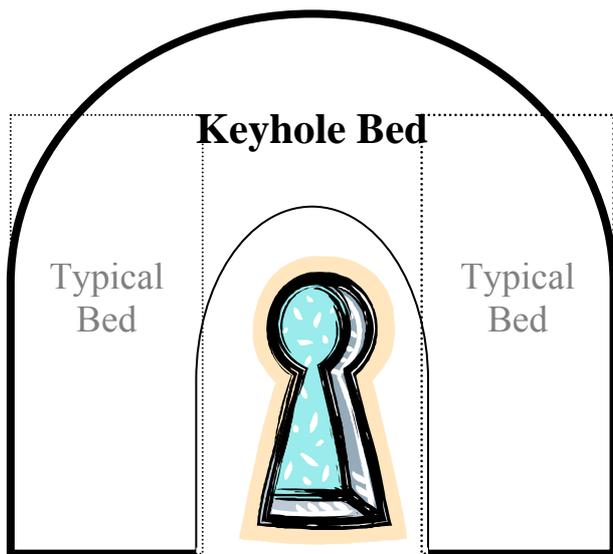
Tephrosia seed for Sale!
Contact: Mr. Hugh Brown
PO Box 256, Mzimba
08-570-768 (c/o Mr. Ng'ambi)



What is a Keyhole Bed?

In Malawi, many people use rectangle, raised beds in their gardens. Using this method creates a need for large number of pathways. This type of design is not the most efficient use of the soil. The pathways eventually become hard from people walking on them, and this prevents water from sinking into the soil. Using too many pathways also takes up space in your garden that could be used to grow more food. It is usually quite a bit of work to walk through all of the pathways and around the beds to water all of the plants during the dry season.



Permaculture always tries to reduce our energy, use everything to its fullest potential, and protect the environment. One way to make typical raised beds more useful is to turn them into Keyhole beds. A keyhole bed simply takes a rectangle bed and wraps it around into the shape of a keyhole. By doing this, you expand the area of land that you are planting, and you can stand in one place to water, plant, or harvest the entire bed.

When designing the keyhole garden bed it is important to think about what you wish to plant and the amount of attention your plants will need. Furthest away from your reach should be the plants that need the least attention; plants that require less watering, less attention, and less care. Closest to the key hole put plants that you visit most frequently and harvest or pick most often. Plants in the furthest areas are often taller plants and close to the keyhole are shorter varieties. Think of which direction the sun is coming from as well from East to West.

Planning ahead, using your land to its fullest potential, and thinking of simple ways to save time and energy are all important parts of design that will allow you to make a productive and efficient garden bed. 

What About the Animals?

Good design looks at all aspects of sustainable living. Incorporating animals into your Permaculture system is beneficial for many reasons. Animals can give us better nutrition in the way of meat, eggs, milk, and other edible animal products. They can be used as protectors to eat damaging insects or help to turn the soil and reduce soil-born diseases. They also provide us with high-nitrogen products that can help the fertility of our soil like manure, feathers, bones, and blood. If animals are just left to do whatever they want, however, they can be very damaging. Anybody who has had a goat get into their garden will know what we are talking about.

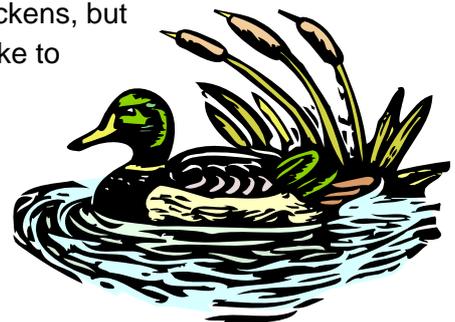
There are many Permaculture designs that help us to incorporate animals into our systems while at the same time protecting the system and using the animals to their fullest potential. We will try to describe a few of them here:

Chicken Tractor—This idea involves a small portable cage that can be moved around from place to place. The cage is usually only about 2 meters long and has handles on both sides so that the whole cage can easily be picked up and moved by two people. The floor is made of chicken wire so that when the cage is set down in a new area the chickens can eat the insects and worms and grass and in the process they leave manure to fertilize the area. This cage is moved around about every two-three days and eventually the whole area becomes healthier and you get all the benefits of raising chickens. Don't forget that Chickens also need water! This can easily be done by wiring a 1-2 litre water bottle to the side of the cage with the bottom of the bottle sticking into the cage and set in a small bowl. When you fill the bottle and tip it upside down, the water will only run out to the level of the bowl and as the chickens drink the water in the bowl will stay full until the bottle is empty.

Chicken Run—This is a great idea for anybody that has a sloping area of land. Make a pen or cage that runs from the top side of the slope to the bottom. This way you can put all of your kitchen scraps, sweepings, and other organic matter inside the cage at the top of the slope. As the chickens pick through it and scratch it down the hill they will turn it, pick through the insects, add manure, and by the time it gets to the bottom of the hill you have nutrient-rich compost to add to your guilds!



Duck-Drop Cage—This works well if you have a fish pond. Build your cage over the pond with a chicken-wire bottom and the duck's manure and bedding material will drop through the wire and into the pond. This is highly nutritious food for the fish that you are trying to raise. The ducks can then have an opening from the cage to the water so that they can swim and bathe and do all the things that ducks like to do! This type of design can also be used with chickens, but have the opening for them to get back to dry ground as they don't like to swim quite as much as ducks do. The cage can be raised over the pond using wood or bamboo poles, bricks, stones, or even hung from a tree like some pigeon cages are. Try to use your creativity and the resources that you have available to you.



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Cattle Pen—If you are keeping larger animals like pigs, goats, or cows, consider making the pen that you keep them in made from live-fencing. Many trees can be *truncheoned* (cuttings that are taken from the main tree and set into the ground to grow again). These truncheons are very helpful in the quick establishment of a live-fence as they can be large to begin with. At the spaces between the truncheons you can fill in with plants that have thorns, spiky plants, or other plants that can help to deter animals from getting out (or getting ahead when you are designing your live fence you can even include plants or trees that can be used throughout the year as fodder for the animals or food for you. The live-fence will also be benefiting from the manure that the animals leave. This idea can also be used on a larger scale to mark the boundaries of an area that animals can free-range in without damaging other areas or your Permaculture system. 🌍



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Zones



Zones are another tool that Permaculture uses to help when they are thinking about designs. Zones are basically a guideline for helping people to reduce the energy that they are using to maintain an area. Normally, you would chose a starting point in which you do the most work. This could be the area around your home, or the area at the end of a borehole where there is access to water every day, or another similar type of area. From this area you do the most work in terms of planting, watering, harvesting, etc. As you move out from this area the plants and animals tend to become less work and less maintained, therefore reducing the amount of energy that it takes you when you are having to walk greater distances. The following are guidelines for zones 1-5 in Permaculture:

- Zone 0** This is the starting point where there is generally the most energy, people, and water – it is usually a house, office, school, borehole, etc. For more information, see issue #50 of this newsletter that can be downloaded from www.neverendingfood.org
- Zone 1** The area closest to zone 0. It is the most managed of all the zones, and contains plants that are used often or provide benefit to your house.
- Zone 2** This area should be designed to minimize the use of water through mulching and shade. It may contain windbreaks, live fencing, vegetables, and fruit.
- Zone 3** This area is dependent on the rains. It may contain staple foods like maize, millet, or sorghum as well as nitrogen fixing trees, and fruits.
- Zone 4** This area may be used for grazing animals or collecting firewood. It requires little management, but still provides food, fuel, and other benefits.
- Zone 5** This zone should be designed to be left alone. It is the “wildlife” zone. Let nature take its course and regenerate the land. It will provide habitat for many useful plants, animals, insects, and birds.

Every Zone uses Guilds and all the other aspects of Permaculture 🌍



Permaculture Network in Malawi

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Theme for the Next Issue: Permaculture Children

Join the Permaculture Network in Malawi !

- **The Permaculture Network in Malawi** began in 1994. The network strives to bring information to members through the newsletter and make connections between members in Malawi and around the world.
- **Membership Fees are 400 mk** for the calendar year. If you are able to pay more it allows us to sponsor people who can't afford the fees, to copy additional materials, and to take on more extensive projects.
- **Sponsorship:** If you can't afford the fees, or can only afford part of the fees, write us explaining why you are unable to pay, why you want the newsletter, and what you are doing with Permaculture – you need to continue write to us at least once a year.
- **Payments: NEW system!** Malawi Kwacha check or postal order or Malawian postal stamps. Include your name, address, all contact details, profession & specific Permaculture interests. Send payments & newsletter submissions to:

Permaculture Network in Malawi, Administrative Secretary

Patterson Majonanga, MOET, Box 328, Mangochi.

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