

Topic 6: Plant, Tree & Animal Health Concepts

Start by using soil health and water concepts

Just as well-fed and well-hydrated people are healthier and stronger than poorly-fed and poorly-hydrated people, well-fed and well-hydrated plants, trees and animals are healthier than poorly fed and poorly hydrated plant, trees and animals! A good indicator that your design is working well is if the plants, trees and animals are healthy. If you find you are having lots of disease, insect damage or other problem, you will need to re-assess your design to make changes.

Considerations for planning the design (assessing and thinking)

Now that you understand the importance of a varied diet, healthy soil, and improved water use, you are ready to plan a design to add the right plants, trees and animals to the area around you. Design means where you put things – how you decorate or arrange things. A good design will take thinking before doing anything. After you put in the plants, trees and animals you will need to evaluate the design and adjust it as needed, which is covered later.

This section about design will focus on what resources we have in Malawi to put into our gardens, farms and general landscape (remember that there are MANY places to grow foods and other useful things!). The Malawi Food Guide's 6 Food Groups can help us plan the number and types of plants and animals to put in our designs. The 6 Food Groups are usually thought of as a tool for meal planning and budgeting, but it is also useful for food production.

This chapter is to introduce people to a new way of thinking about growing foods. After reading and thinking about these ideas, you should be able to plan a garden, farm, and landscaping around your home or office or school or church (etc.) in a way that helps each area grow more foods and medicines.

Consider how nature designs itself

Take some time to look at how nature designs itself:

- ? **Diversity**: Do you see just one type of plant, tree or animal in an area? Not usually. Nature puts different plants, trees, animals, and insects all in one area. How does nature keep its soil healthy? Nature keeps a variety of different legumes, animals and plenty of mulch. Nature digs by putting roots deep into the soil, while other things have big wide roots. Nature uses all its space by having plants climb other plants or rocks for support. Usually all spaces above and below the ground are taken.

- ? Many types of Foods: In natural areas you can usually find vegetables and fruits for humans very easily, look a bit harder and you'll find the rest of the Malawi 6 Food Groups - some legumes and nuts, animal foods, staples and even fats and oilseeds.
- ? Seeds replant themselves: Now look how nature plants itself – does nature need to go to a store to buy seed? No! Nature replants itself in many different ways, but every way strives to be ongoing. Permanent.
- ? Balance: Does the area look healthy? Usually. There is not much damage by disease or insects. With a variety of things planted, nature can stay healthy. Sometimes plants are dying during the dry season, but this is a natural part of life. These dead plants and trees fall to the ground to feed the soil and other plants, trees, insects, and animals that eat them.

Why? Who goes into a natural area and plants these things, feeds them and takes care of them? No one! There are:

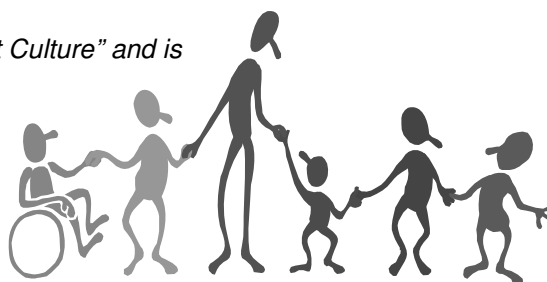
- ✓ No hoes (*the roots and mulching and animals do the digging*),
- ✓ No purchased seeds (*nature replants itself*),
- ✓ No chemical fertilizers (*the mulching and inter-planting takes care of the soil*),
- ✓ No chemical killer '-icides' such as pest-icides, fung-icides, and herb-icides. (*Nature has a balance of predators, flowers and smelly plants to keep 'pests' and 'weeds' in control*).

***Nature is Amazing,
Isn't It?***

A guide to agricultural designs: Permaculture Guilds

We can mimic what nature does, but instead planting more foods for us by following the Malawi Food Guide (the 6 food groups). We can also choose to include local medicines, building materials and other useful things to assist us in staying healthy and prosperous.

A method used in Permaculture (*short for "Permanent Culture" and is a way of Sustainable Living*) is to use a guild. What is a guild in our society? It is a group of people that join together to work toward a similar goal. It could be a woman's guild at church who usually help the aged, orphans, widowed or others in need.



Guilds: Working together for a Purpose

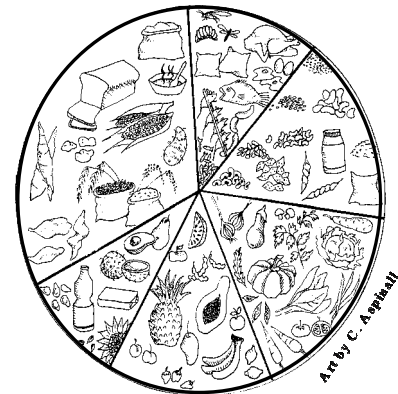
Permaculture guilds also put things together that help each other together grow better and makes the are healthier, too. These 'things' could be plants, trees, animals, ponds, mulching, rocks, buildings, drains, pathways, roads – everything we use to create a community. We use the word 'design' to make a plan what items should go where considering the soil, wind, sun, and how people and animals use the area.

A Permaculture guild includes 7 types of things:

- ✓ The first is food for us, based on the 6 Food Groups, as that is the goal of the agricultural system most of the time. A guild could be food for animals if that is your goal (or whatever other goal you have!);
- ✓ 3 ways to keep the soil healthy and make the most of our water – without healthy soil we can't have food;
- ✓ 2 ways to make the most of our space;
- ✓ Last, include things to protect the area from any type of destruction.

The 7 parts of a Permaculture guild are:

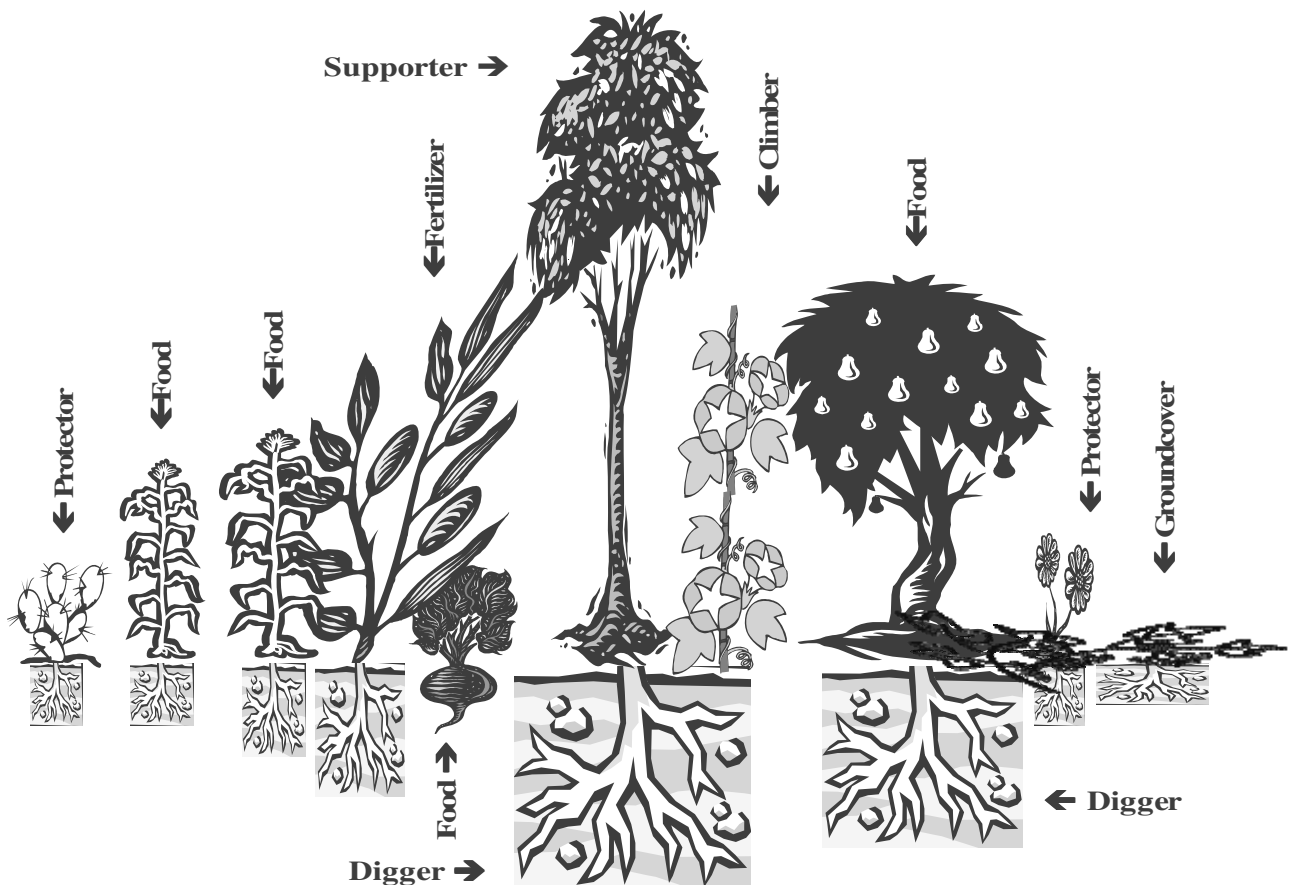
1. Food for us. Based on the 6 food groups.
2. Food for the soil. We covered this in the chapter on soil. This includes legumes, decaying matter, compost, compost tea, mulch, manure, etc. One project in Malawi teaches how to use human manure and we've used it at our home for 7 years!
3. Diggers. Deep rooted plants, such as trees, will reach deep into the earth's soil and bring minerals up to the surface. Examples of diggers include: cassava, sweet potatoes, yams, trees and other deep rooted plants, etc.
4. Groundcover. These protect the soil from the sun, helps to hold moisture, and helps to keep "weeds" (good plants in the wrong place) down. There are many types of groundcovers available in Malawi. These include: sweet potato vines, pumpkin, cucumbers (*minkaka*, *zinkhananga*, *fwifwi*, etc), and anything else that will vine or spread across the soil. Mulch is also a form of groundcover.
5. Climbers. These things grow up and provide us with another area of food production. Examples of climbers that you can use include: beans, passion fruit (*magalagadeya*), loofa (*chinkupule*), air potatoes, cucumbers (*zipwete*, *minkhaka*), etc.
6. Supporters. These are stronger items that support the climbers and make the most of our space. Could be a tree, bush, stalks (*mapesi*) such as a maize or sunflower, or it could be a house, bafa, wall, fence, etc.
7. Protectors. Any thing that helps to protect your guild is a protector, could be thorns, flowers, smelly plants, magical species that protect from thieves, etc. This could also include attracting predators like frogs, birds and lizards.



When you keep these 7 things in mind, you can practice putting them all together in one place or area to help each other grow better. After a little while, you won't even have to think about it, the ideas will come to you easily!

Any type of plant, tree or animal can fit into a guild. Every area will have a different type of guild depending on the conditions for that area including: what you like to eat, what seeds you have, the type of soil, the amount of water in the area, the weather, what animals live there, etc. Some guilds develop over time, for example, finishing the live fence, developing permanent pathways, establishing perennial plants and trees, and getting the soil healthy.

Here is one example of a Permaculture Guild:



Source: *Permaculture Nutrition Training Manual*, 2000 edition. Kristof & Stacia Nordin, Full page handout available in appendix

Keeping in mind the way nature likes to design itself, here are some other things to consider before you start to design your guilds – these ideas are not necessarily in the order that you will think about them – it depends on the site and what YOU feel most comfortable starting with.

Consider your resources

It helps to organize your thoughts and start preparing for your plan by listing all of your resources. An easy way to organize is to use the 7 parts of a Permaculture guild.

- ✓ **Food resources:** In an earlier lesson you should have already listed your food resources by the 6 food group model, get that list out and add any new items that you've thought of, or maybe you've opened your mind and looked with new eyes and found seeds in nature, or your market, or at your friend's home.

- ✓ Other parts of the guild: Now list your resources for the other parts of the things that you need for a guild. It might be best to make a list on paper, such as an exercise book that you can keep for future reference and to add to as you have more resources available. You could use one page of the book for each type of thing needed (6 pages for foods available, 1 for feeding soil, 1 for diggers, 1 for groundcovers, 1 for climbers, 1 for supporters, and 1 for protectors). Here is one short example:

| 1-Foods (see other list) | 2-Food for Soil | 3-Diggers | 4-Ground covers | 5-Climbers | 6-Supporters | 7-Protectors |
|-----------------------------|------------------------|--------------------------|-------------------------|-------------------------------|--------------------------|---------------------------|
| (Vegetables) | mtedza groundnuts | mbatata sweet potato | mbatata sweet potato | magalagadeya passion fruit | nandolo pigeon peas | mpungabwe basil |
| (Fruits) | kalongonda mucuna | chilazi yams | maungu pumpkin | kalongonda mucuna | mpendedzuwa sunflower | anyezi onions |
| (Legumes/Nuts) | nsawawa peas | nandolo pigeon pea | kayimbe melon | matamati tomato | mitengo trees | adyo garlic |
| (Animals) | msangu acacia? | yazipatso fruit trees | udzu grasses | nsawawa peas | nyumba house | viwale ginger |
| (Staples) | nandolo pigeon pea | anyezi onions | vindikiro mulching | chinkapule loofa sponge | mpanda fence | kutawanjoka snakes run |
| (Fats) | chimbamba lima bean | coco coco yams | mavwende watermelon | chimbamba lima bean | mabilinganya eggplant | maluwa flowers |

Consider sourcing seeds

Many seeds can come **free** from right around you – just start opening your eyes to them! At the market, friends' yards, wild places, roadsides. Here are some hints to getting the best seeds for your Guilds:



- ✓ Use perennials and things that self-seed. The easiest choices of plants and trees are ones that live for many years and ones that spread their seeds on their own and keep growing (open pollinated and usually non-hybrid). Choose some permanent plants for each area so that you reduce the work (and other inputs) of re-planting new things. There are many plants and trees that keep going for many years; see the end of this booklet for a table that describes some choices in Malawi. Many people do not realize that there are many plants that can be 'trimmed' and they keep going with new shoots, this includes:

| | | |
|-----------------|-------------------------|-----------|
| Sorghum | Okra | Cabbages |
| Cape Gooseberry | Hibiscus (many species) | Peppers |
| Pigeon Peas | Lablab (khungudzu) | Chimbamba |

- ✓ Indigenous plants & animals are usually better adapted to conditions and easier to care for.
- ✓ Save seed from the healthiest: If you are collecting and saving your seed, select the seeds from the healthiest plants and trees. The same is true for breeding the healthiest animals.
- ✓ Seed Storage: Dry the seeds to save them. Store them in a shady, dry area. If the seeds get wet they will want to start growing.

- ✓ From your kitchen: If you cut off the root end of onions they can be re-planted to produce more onions, pineapple or carrot tops can be put in the soil and will grow, and seed from avocado, tomatoes, eggplants, garlic, and other foods that commonly pass through your kitchen can also be planted. You generally won't know the source and quality of these seeds until they grow and mature, but we've had very good luck with this method.
- ✓ Free seedlings! Always check the top of compost piles, sweeping piles, and other places that people discard foods that have seeds in it. Transplant these seedlings into your guilds.
- ✓ Share! Start seed sharing networks and let others know that you are interested in collecting local seeds.
- ✓ Make money! You can also find creative ways to market local seeds for a reasonable price to make them available to others.



Consider yields - how many plants, trees and animals you need

Your ultimate goal is to consider the number of people you need to feed, and/or how to make the money from what you grow so you can buy other foods or share with others. To decide how much you need, you can use the Malawi 6 Food Groups as a guide along with knowledge of approximately how much each food yields with the start up list in the appendix and with the help of local knowledge.

This table is just an approximate need, people may need more or less, or they may choose to balance the groups differently such as a vegetarian who doesn't eat the animal food group and instead eats a bit more from all the other groups.

| Food Group | Adult needs approximately Grams/day | Adult Calories/day | Kilograms needed every month per Adult |
|--|-------------------------------------|----------------------|--|
| Fruits | 300 | 150 | 9 kg |
| Vegetables (<i>roots, fruits</i>) | 400 | 128 | 12 kg |
| Legumes & Nuts | 100 | 388 | 3.4 kg |
| Animal Foods (<i>milk, eggs, insects, flesh</i>) | 135 | 147 | 4.1 kg |
| Staples (<i>grains & roots</i>) | 500 | 1078 | 15 kg |
| Fats & Oilseeds | 50 | 235 | 1.6 kg |
| Total: | 1485 gm | 2126 Calories | 45.1 kg |

*** This is just an estimate. Each food type within the food group varies as do all adults. Calculated by S. Nordin, RD*

**To EAT the Malawi Food Guide,
we need to start GROWING it!**