

Permaculture Network In Malawi

Issue #48: Trees

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Tremendous Trees! Marvelous Mitengo!

The importance of trees cannot be overemphasized. This is especially true in areas such as Malawi where rainfall can be limited and unpredictable. Once trees are established, they are virtually drought and flood resistant. This is due to their deep root systems, which reach far beneath the earth's surface and are able to absorb ground water throughout the dry season. Trees provide us with hundreds of uses, from food to furniture, medicines to meeting areas.

They are a renewable resource and take very little effort to plant and maintain. Unlike single year crops such as maize, trees can also be extremely high yielding for many, many years. In terms of conserving energy they are exceptional because they don't require tilled fields, labor-intensive ridging, hours of weeding, and many of the other practices that have become associated with "modern" day agriculture.

With so many positive attributes surrounding trees it would seem they are a "miracle" plant. Indeed, many cultures throughout history have held trees in very high esteem. They have been revered as sacred, mythological, enchanted, and even holy. In Malawi, trees used to represent a symbol of religion due to the fact that worship often took place in large groves of trees.

Today, however, many societies seem to have replaced their respect for trees with environmentally destructive practices. Instead of living in harmony with the many benefits that we could be receiving from trees, it almost seems that we have declared war upon them. We cut them down by the hundreds of thousands, destroy seedlings with the practices of burning and slashing, and clear large areas of land in the name of progress and development. Instead of viewing trees as being vital to our existence as humans, we have systematically destroyed them and the environments in which they live.

This attitude is slowly changing, however, through better understanding of individuals and through practices like Permaculture. In a book called Forest Farming, the authors, J. Sholto and Robert A de J Hart, make the following statement in support of this changing attitude toward trees:

"The 'tool' with the greatest potential for feeding men and animals, for regenerating the soil, for restoring water-systems, for controlling floods and droughts, for creating more benevolent micro-climates and more comfortable and stimulating living conditions for humanity, is the tree.

Of the world's surface, only eight to ten percent is at present used for food production. Pioneer agriculturists and scientists have demonstrated the feasibility of growing food-yielding trees in the most unlikely locations—rocky mountainsides and deserts with an annual rainfall of only two to four inches. With the aid of trees, at least three quarters of the earth could supply human needs, not only of food but of clothing, fuel, shelter and other basic products. At the same time wild-life could be conserved, pollution decreased, and the beauty of many landscapes enhanced, with consequent moral, spiritual and cultural benefits."

In this issue we will take a look at more of these benefits that trees can give us and hopefully we will give you some practical ideas for incorporating them into your life. 🌱

Can Trees Provide a Healthy Diet? (Yes!)

In order to stay healthy, Malawi teaches that we need to choose nutritious foods from **six different food groups**: (1) vegetables, (2) fruits, (3) legumes & nuts, (4) fats, (5) staples, and (6) animal products. This is a change from the old days of only teaching about three food groups. This switch to six groups makes it easier for people to choose diverse and varied foods for their diets, their gardens, and their farms. If we are planting, growing, and eating many different foods from all the food groups, then it is very likely that we will be giving our bodies all of the nutrients that they need to stay healthy and disease free.

If we also choose foods that are perennial (e.g., they keep growing for several years), then we have even less work and it is easier to be food and nutrition secure. Some of the best perennials are trees. Once you plant a tree you may need to give it a small amount of care for a year or two until it is established, but then your work is basically finished. Remember that in nature many trees germinate and survive with no human care at all! You can sit back and harvest the rewards of your efforts for many, many years. By planning ahead we can also use trees to give us valuable nutrients from all six of Malawi's food groups.

Try to think of as many examples of trees in each of the six food groups and then get them planted around your homes, work places, schools, hospitals, churches, roadsides, roundabouts, or any other place where people will be able to benefit. Depending on the trees you choose, you can see results from as quickly as 6 months, and these benefits will continue to increase as the years go by. The following are a few examples of trees from each of the Malawi Six Food Groups:

Examples of Food Trees for the Malawi Six Food Groups:

(1) Vegetables:

- hibiscus (*thelele thengo*)
- baobab (*mlambe*)
- moringa (*chamwamba*)
- tamarind (*bwemba*)

(2) Fats:

- avocado (*mapeyala*)
- coconut (*nkoko*)
- wild oil palm (*kanjindo*)
- kapok (*usufu*)

(3) Fruits:

- custard apple (*mphosa*)
- loquat (*msuku*)
- jujube (*masawo*)
- african bubblegum (*matowo*)
- monkey orange (*maye/mateme*)

(4) Staples:

- cassava (*chinangwa*)
- banana (*ntochi*)
- cape fig (*mkuyu-pasi*) – aerial roots (the roots in the air) are said to be edible when they are young.

(5) Legumes & Nuts:

- pigeon pea (*nandolo*)
- cashew (*mbibu*)
- hissing tree (*mbula*)
- Indian almond (*mkungu*)

(6) Foods from Animals:

- *Sclerocarya caffra* (*mfula*) - the edible mopane worm feeds on its leaves, which has twice the crude protein of beef!
- cabbage tree (*mbwabwa*) - attracts the edible caterpillar of the Common Emperor Moth known as “kalaungu” in Chichewa
- Poison Grub Commiphora (*khobo*) - attracts an edible caterpillar known as “nymakhobo” in Chichewa

The Wonders of Chamwamba

(*Moringa Olifera* - The Horseradish Tree)

The Moringa tree is native to parts of India, Afghanistan, and Bangladesh, but was introduced to Malawi many years ago. It is best known in Malawi by its Chichewa name “Chamwamba”. The Moringa tree is very useful to humans and it is easy to see why Indian settlers would have brought this tree with them. A few of the uses for Chamwamba are:

Food: The leaves, flowers, seed pods, seed oil, and roots are all edible.

- **Leaves:** One study has shown that the leaves have 10 times as much vitamin A as carrots, 7 times as much vitamin C as oranges, 4 times as much calcium as milk, three times as much potassium as bananas, and almost the same amount of protein as eggs. The leaves can be used raw, boiled, stir-fried, or added to soups.
- **Flowers:** can be cooked and added to other foods, or fried like pumpkin flowers are. They can also be steeped in hot water and used as a tea.
- **Young seed pods:** are usually cut into pieces, boiled, and mixed with seasonings.
- **Roots:** can be used when the plant is 60 cm tall. The root is pulled up, scraped, ground, and mixed with vinegar and salt to make a relish similar to horseradish. Care should be taken to remove the root bark completely since it contains harmful alkaloids. Even then, the roots should not be eaten in excess.
- **Cooking Oil:** The dried seeds of Chamwamba contain 40% oil that is close to the quality of olive oil.

Water Purification: The crushed seeds of the Moringa tree act as a natural coagulant which binds to solids and bacteria in dirty water, causing them to sink to the bottom. Treatment with this seed powder can produce clean water with 90-99% of the bacteria removed.

- **To treat 20 litres of water:** Remove the shells of from mature Moringa seeds (do not use discoloured seeds) and crush the white kernels in a mortar until it is a fine powder. Add 2 grams (2 teaspoons) of powder to a cup of clean water in a covered bottle. Shake for five minutes in order to activate the chemicals in the powder. Filter this solution through a clean cloth into the bucket of water to be treated. Stir the bucket rapidly for 2 minutes, then slowly for 10-15 minutes. Leave the bucket to sit without being disturbed for one hour. After one hour, the solid particles will have settled on the bottom of the bucket.



Medicinally: According to a paper put out by the Forestry Research Institute of Malawi, the greatest knowledge of Moringa’s medicinal uses comes from the areas of Nsanje and Karonga. These areas reported using the leaves for treating conjunctivitis, scorpion bites, and diarrhoea. The roots were also mentioned in the treatment of fevers.

Environmentally: The Moringa tree can be grown from cuttings (sticks or poles) of up to 1.5 meters long. This means that it can be easily and quickly used for hedges, live fencing, and helping to hold the soil to prevent erosion.

There are many useful trees in Malawi, Moringa Olifera is just one of them. The many uses of this tree, however, make it worth considering when planting around your house, workplace, garden, or farm. It is easy to grow either from seed or from cuttings, so give it a try. A few projects in Malawi were giving this seed out, so ask your Forestry Officer or Agricultural extension worker if there are some in the area.



Remember, there is no one “miracle” tree or “miracle” food, but with the incorporation of many diverse and useful plants we can all begin to lead healthier and happier lives. 🌍

**Share the wonders of
Malawi Trees with the world!**

There are also many useful trees that are indigenous to Malawi, probably just as useful or more useful than Chamwamba! We need to write down and test our own species and share the information with others so that all are aware. A lot of research as been done on Chamwamba and shared worldwide, we can do that with our trees, too!

Permaculture Network News: Progress since 2002

A few of the Permaculture Network members have been trying to come together and guide the progress of the Network so that we are an official organization. At the moment, your membership fees and other donations primarily produce a quarterly newsletter to share information, but few other activities are taking place, at least together as a Network. Of course our members do a lot of individual trainings, implementation at their homes and work, but the idea of a Network is usually also to collaborate together for a stronger and bigger impact.

This article attempts to highlight briefly the work that has been going on behind the scenes for just over 2 years. Leo Kuwani and Patterson Majonanga provided the bulk of the information, the editors adapted it and compiled it chronologically and also had June Walker review it for her input. Here is what has been happening!

- 2002 The Great Trek: In the January 2003 issue of the Permaculture Newsletter (Issue #42, Medicines) we printed a report titled 'The Great Trek' by Leo Kuwani. The paper documented a trip that was done in October 2002 by the Permaculture Network in Malawi's founding member June Walker along with Network members Jamestar Langwani, Leiza Dupreez, Justice Betha, Leo Kuwani, and joined by Sheila Stevens, a management consultant from the United Kingdom who also provided the funding for the trip, which was managed by Jamestar. At that time this group agreed amongst themselves that they would take over the leadership as 4 equal coordinators of the Network since June Walker was ready to hand over management duties. These coordinators drew up a concept paper for the Permaculture Network, although it was never distributed to Network members for review and input except for parts of it in the newsletter.
- 2003 Training Trainers: In September, Justice, Leo, and Jamestar attempted to hold a training of trainers course with 20 participants but ran into conflict between the trainers and the majority of the participants left the training. In December, Patterson Majonanga met with the 3 facilitators to try to resolve the conflict and make a way forward for the network. All the funding for these activities were from private funds, not from Permaculture Network funds.
- 2004 Meetings: Leo, Jamestar and Patterson have made efforts to meet about how to organize the Permaculture Network. Four meetings were held in 2004 (March, June, August and September 2004) and one in 2005 (April) at the Museum of Malawi in Blantyre using their private funds. This action was taken during that time:
 - Proposed Office bearers: These were changed from the suggested 'coordinators' in 2002 to more specific position titles. The other change since 2002 is that Justice Betha chose to step back and provide support as a member, and instead Patterson Majonanga took over in the leadership role. The proposed office bearers and their duties are as follows:

Proposed Office Bearer Titles:	Person Suggested to Fill the Position:	Proposed Duties of the Position:	Proposed Requirements for Position:
Patron	June Walker		
Board of Trustees	Some contacts made		
National Coordinator	Leo Kuwani	Controlling officer and chief spokesperson	Diploma
Administrative Secretary	Patterson Majonanga	Financial management and strategies of generating income	Certificate in accounts
Research & Documentation Secretary	None yet	Management of information and documentation	Diploma, Degree or Advanced Certificate
Planning & Logistics Secretary	Jamestar Langwani	Supervision and execution of programmes and projects	MSCE Certificate
Newsletter Editors	Kristof & Stacia Nordin	Publication and documentation of information	
Regional Coordinators	None yet		

- Proposed Constitution: this was drawn up and titled "Community Participation a Prerequisite for National Development" and was adopted by the office bearers. This constitution has not been given to Network members for review and approval yet.
- Proposed Programs: The constitution suggests having three programs: Environmental conservation; Participation; and Sustainable Agriculture.

- **Proposed Annual General Meeting:** The constitution proposes holding one meeting annually for all members of the network.
- **Proposed contact information:** Permaculture Network in Malawi, PO Box 32587, Blantyre. permaculturemw@yahoo.co.au . These contacts are currently managed by Patterson, Leo and Jamestar.
- **Bank Account:** On 26th July 2004 the proposed office bearers opened a bank account at the National Bank of Malawi, Customs Road, Limbe under the name of the Permaculture Network in Malawi. The account number is: 0141 8259 13600 with the swift code number: NB MAMWMW 024. Details were not provided to the Newsletter Editors on how the Bank Account funds are proposed to be managed. Funding was used from a private donation to start up the bank account.

What are the NEXT STEPS for the Network?

The members of the Network need to review the proposed documents, agree on the Constitution, and vote for Office Bearers. To do this, the current office bearers will:

1. Print and distribute the proposed constitution to members – Patterson, Leo, and Jamestar will forward the constitution to the newsletter editors and it will be included as a supplement the next newsletter.
2. Hold an Annual General Meeting to vote on the constitution and office bearers – Patterson, Leo and Jamestar to organize.
3. Allow for input by mail for those members who are unable to attend the Annual General Meeting – Patterson, Leo and Jamestar to arrange with the newsletter editors.
4. **We are open to ALL advice and participation at ANY time on this or any other issue!**

Note about the Network’s Current Membership fees:

- * *The current membership fees that have been collected are not sufficient to cover the funding needed for the newsletter. This is an issue that we started working on in 2004 as it is primarily due to member non-payment and a high number of free memberships given to unknown recipients.*
- * *In mid-2004 we sent notices to 200 members who were removed from the list because of over a year of non-payment, about 15 of these members sent in their payments or wrote asking for free membership. In 2004 we only collected 12,300 mk from about 26 members. The two newsletters that were produced in 2004 cost a total of 19,033.00 mk to print and mail to the approximately 100 members that were remaining on the membership list in 2004. That year we also had about 55 members receiving the newsletter free and another 40 that didn’t pay yet for 2004. Some of these members have since paid in 2005 and those that don’t pay by mid-2005 will be removed and sent a friendly notice of removal and how to re-join.*
- * *The cost for stamps has almost doubled in 2005 meaning that we will rely on donations even more this year than last year. For 2005 we have had: 24 people renew their memberships; 13 wrote for free membership; 51 members continued sponsorship from 2004; and 33 have outstanding payments. The total membership stands at just over 120 members (see attached membership list).*
- * ***Please send in your membership fees, and, if you can afford to do so, send some extra sponsorship money for the community groups! ☺***

Seed Saving Programme

The Permaculture Network received funds to jumpstart a seed saving and distribution program. Kristof made a plan and implemented a program with the Lilongwe Branch of the Wildlife and Environmental Society of Malawi (WESM) to establish a seed program through the Wildlife clubs in the Central Region. We hope in the future this can spread to all regions!

**Permaculture Network in Malawi
Member returns to the Soil...**

Dr. Pritam Singh died overseas of cancer late last year (2004). He will be remembered for over 30 years of devoted service to the people of Mulanje and elsewhere. Dr. Rattan was a Senior Research Scientist and had a special interest in sustainable rural development.



Observe, Learn & Share!



YOU, as a Permaculture Network Member, can use this space for FREE! If you have something to share, or are looking for advice, please write to the Newsletter Editors.

(The Editors do their best to read the letters correctly and to type them into the computer as written by the author!)

“Had I Known...” by Leo Kuwani

“Had I known! Had I known!” These are haunting words which could be avoided if only one had practiced or is practicing Permaculture—the wisdom of nature. Nature never monocrops, plants in straight lines, or sweeps. Observe nature and study how it feeds itself when not disturbed by humans. To avoid the haunting words, “Had I known!” we can:

- Interplant as many crops as we can in our fields in order to accommodate all elements, as these elements all help each other. This is companion planting so as to encourage the work of nature. This will also help us when we have too much or too little rain for some of the crops can still do well and make us sustainable in life throughout the year.
- Integrate animals in our farming systems so that the animals can help us protect our crops when they dig the soil or eat the parasites in the field. In the end, we can use the animals as a source of food, income, power, or energy.
- Have a portion of woodlot or a living fence as to encourage microclimate environments. These also protect us from strong winds and act as hedges. These are places where natural animals and birds can live and later come to visit our fields. We gain something from them as every element assists each other.
- Avoid bushfires, overgrazing, tilling on steep slopes, and the clearing of vegetation from along riverbanks. Instead, plant fruits and trees that will assist in the farming system.

If we can have as many elements as we can on our land and maintain them, we are not going to fear the haunting words, “If I had known!” Instead, we are going to receive more and more from our land and have a sustainable life. Practice the knowledge you have learned or observed from nature or Permaculture for getting better and better results. 🌍

Interesting Trees in Malawi

(The majority of this information has been taken from the book Trees of Malawi, by J.S. Pullinger and A.M. Kitchin)

English Name: Quinine Tree **Chichewa Name:** Mwimbi **Scientific Name:** Rauvolfia caffra

Grows to 20 Meters. The wood is soft, and used for spoons, bowls, drums, and curios. It makes a good firewood. The tree contains a thin, bitter-tasting latex, once believed to be a cure for malaria. It has several uses in traditional medicine, and has been found to contain alkaloids which are used as tranquilizers in cases of high blood pressure, and are obtained commercially from related species in India and East Africa. Except in a very dry year these trees are evergreen. They are easy and quick to grow.

English Name: Persian Lilac **Chichewa Name:** Ndya **Scientific Name:** Melia azedarach

The tree grows up to 20 metres. The wood is hard and durable enough for use as house poles, etc. The fruits are poisonous to humans although birds and some rodents eat them. An infusion of the fruits sprayed on leaves will prevent their being eaten by locusts. The leaves are fed on by the larva of the butterfly *Charaxes brutus natalensis*, the white-barred Charaxes. This is a quick-growing tree for shade, and attractive when in flower. When conditions are cold enough the leaves turn a beautiful golden color before falling. 🌍

Save Our Trees!

The best way to renew the tree population is to plant and/or protect as many new trees as you can. If you cut one tree down then you should plant at least five more to replace it. If everybody did this we could have access to firewood, tree foods, building supplies, and even medicines every day of the year. Firewood shouldn't have to be sold in the markets, it should be the responsibility of every individual to ensure that there are plenty of trees for everybody in Malawi—free of charge.

*Trees are a
“renewable resource”
but they must be
constantly “renewed” if
we are going to keep
using them.*

You don't need money to plant trees, nature provides the seeds for free and often times even germinates them for us. Look in compost piles, mulching, on the sides of the road where children walk to school, in market ‘trash’, in natural areas – the list goes on! All we have to do is plant these seeds or care for these seedlings in order to have more trees to use.

Another way to protect our trees is to reduce the amount that are being cut down for firewood. One way is through the use of fuel-efficient stoves. These stoves are easily made out of local materials such as broken bricks and mud. The way they work is by reducing the amount of air that flows through the fire. You have all seen what happens to a fire in a field when the wind blows, it burns very quickly and out of control. The same thing happens in our cooking fires, if we allow too much air flow (such as an open 3-stone fire) then our firewood burns up very quickly and the flame goes in all sorts of crazy directions. By using a fuel-efficient stove, you have the three sides closed to the air with an opening in the front where the firewood is placed. The top of the stove is also an opening that helps to make sure that the fire is only hitting the bottom of the pot where it is the hottest and not shooting up around the sides of the pot and being wasted. People in Malawi who are using these types of stoves can cook an entire meal with only a few sticks (or paper briquettes! Read on to learn more...).

Another way to reduce the use of firewood is to burn things other than trees. A really great idea is to use briquettes made out of leftover paper or sawdust. Making briquettes out of paper is as simple as soaking some used paper in water for a day or two until it starts to get soft and break apart. Then make fist-sized balls out of the soft paper and leave them in the sun (or any airy place) for a few days until they are dry. When they are dry they can be burn just like charcoal. (Note: Do not use to directly cook meat or vegetables due to the dyes and inks that may have been on the paper. They can be used to cook anything in a pot such as sorghum, beans, nsima, tea water, bathing water, etc.) We make them at our home and use them frequently and are happy to show others if you are in the area and need a demonstration! There are other places also making different types of Briquettes:

*The **BEST**
idea to save
firewood:*

*Eat more
RAW FOODS!*

- **The Wildlife and Environment Society (WESM) in Lilongwe** is using waste paper from local offices to make briquettes and selling them to help support their projects and the environment. I just bought them for all the workshops that I've been holding and they are super! Take a visit Lilongwe Nature Sanctuary where their office is and they will show you how they do it! There are also has branches in: Balaka, Blantyre, Dwangwa, Mulanje, Mzuzu, Nkhata Bay, and Zomba. *Contact:* WESM LL, Box 30293, LL3. 01-771-269. wesm-llw@africa-online.net
- **(PAMET) Paper-making Educational Trust** - a recycled paper making organization in Blantyre that also makes briquettes along with many other recycled paper products including furniture, envelopes, and frames. *Contact:* P.O. Box 1015, Blantyre. 01-623-895. pamet@sdpn.org.mw
- **WICO lumber yard in Dedza** is another place that is making briquettes. Theirs are out of sawdust leftover after cutting the logs into timber. *Contact:* Box 42, Dedza. 01-223-219/143.

There are lots of great ideas out there to help us protect our trees and reduce the pressure that we are putting on them. Every little thing helps, so try to think of new ways don't forget to start planting! 🌍

Landmark Victory in World's First Case Against Biopiracy!! European Patent Office Upholds Decision to Revoke Neem Patent

The following article was taken from the Ecoterra International news posting. You can find them at:
<http://www.ecoterra.net>

Munich, March 8, 2005. In a landmark decision, the European Patent Office upheld a decision to revoke in its entirety a patent on a fungicidal product derived from seeds of the Neem, a tree indigenous to the Indian subcontinent. The historic action resulted from a legal challenge mounted ten years ago by three Opponents: the renowned Indian environmentalist Vandana Shiva, Magda Aelvoet, then MEP and President of the Greens in the European Parliament, and the International Federation of Organic Agriculture Movements (IFOAM). Their joint Legal Opposition claimed that the fungicidal properties of the Neem tree had been public knowledge in India for many centuries and that this patent exemplified how international law was being misused to transfer biological wealth from the South into the hands of a few corporations, scientists, and countries of the North. Today the EPO's Technical Board of Appeals dismissed an Appeal by the would-be proprietors America and the company Thermo Trilogy its Opposition Division five years ago to revoke the Neem patent in its entirety, thus bringing to a close this ten-year battle in the world's first legal challenge to a biopiracy patent.

Dr. Vandana Shiva, who travelled from India to be present at today's hearing, commented, "What a lovely celebration for the women of India that this long-awaited decision falls on March 8th, International Women's Day." Denying the patent means upholding the value of traditional knowledge for millions of women not only in India, but throughout the South. The FREE TREE WILL STAY FREE. This victory is the result of extremely long solidarity. It is a victory of committed citizens over commercial interests and big powers.

Magda Aelvoet, Belgian Minister of State and former Health and Environment Minister, was President of the Green Group in the European Parliament when the original Opposition was submitted. Just after the ruling, she commented, "Our victory against biopiracy is threefold. First, it is a victory for traditional knowledge and practices. This is the first time anybody has been able to have a patent rejected on these grounds. Second, it is a victory for solidarity: With the people of developing countries definitively earned the sovereign rights to their natural resources and with our colleagues in the NGOs, who fought with us against this patent for the last ten years. And third, coming as it does on International Women's Day, this is also a victory for women. The three people who successfully argued this case against the might of the U.S. administration and its corporate allies, were women: Vandana Shiva, Linda Bullard and myself. It can also inspire and help people from developing countries who suffer the same kind of theft but did not think it was possible to combat it." 🌱

Fewer trees, less rain: Study uncovers deforestation equation

This article is taken from 'Foodnews' an e-mail service that shares information to help more people discuss crucial policy issues affecting global food security. The service is managed by Amber McNair of the University of Toronto in association with the Munk Centre for International Studies and Wayne Roberts of the Toronto Food Policy Council, in partnership with the Community Food Security Coalition, World Hunger Year, and International Partners for Sustainable Agriculture. Please help by sending information or names and e-mail addresses of co-workers who'd like to receive this service, to foodnews@ca.inter.net

Source: <http://www.smh.com.au/news/Environment/Fewer-trees-less-rain-study-uncovers-deforestation-equation/2005/03/03/1109700611592.html?oneclick=true>

Australian scientists say they have found proof that cutting down forests reduces rainfall. The finding, independent of previous anecdotal evidence and computer modelling, uses physics and chemistry to show how the climate changes when forests are lost. Ann Henderson-Sellers, director of environment at the Australian Nuclear Science and Technology Organisation, at Lucas Heights, and Dr Kendal McGuffie, from the University of Technology, Sydney, made the discovery by analysing variations in the molecular structure of rain along the Amazon River.

Not all water, Professor Henderson-Sellers said, was made from the recipe of two atoms of "common" hydrogen and one of "regular" oxygen. About one in every 500 water molecules had its second hydrogen atom replaced by a heavier version called deuterium. And one in every 6500 molecules included a heavy version of the oxygen atom. *(article continues on the next page....)*

Knowing the ratio allowed scientists to trace the Amazon's water as it flowed into the Atlantic, evaporated, blew back inland with the trade winds to fall again as rain, and finally returned to the river. "It's as if the water was tagged," she said. While the heavier water molecules were slower to evaporate from rivers and groundwater, they were readily given off by the leaves of plants and trees, through transpiration.

"Transpiration pumps these heavy guys back into the atmosphere." But the study showed that since the 1970s the ratio of the heavy molecules found in rain over the Amazon and the Andes had declined significantly.

The only possible explanation was that they were no longer being returned to the atmosphere to fall again as rain because the vegetation was disappearing. "With many trees now gone and the forest degraded, the moisture that reaches the Andes has clearly lost the heavy isotopes that used to be recycled so effectively," Professor Henderson-Sellers said.

Tom Lyons, professor of environmental sciences at Perth's Murdoch University, said there was now "certainly very strong evidence that changes in surface conditions have an impact on the climate. In some parts of the world the impact is very marked". The Amazon research "helps us understand the mechanism".

Professor Henderson-Sellers said the average water molecule fell as rain and re-evaporated five times during its journey from the tropical Atlantic to the river's starting point in the Andes mountains. Forests played a vital role in keeping the heavy molecules, and their far more common relatives, moving through the water cycle. "People will tell you that when you remove the forests it rains less," she said, adding, however, such anecdotal evidence, and even computer modelling, did not convince everyone.

"This is the first demonstration that deforestation has an observable impact on rainfall." 🌍

a few Tree Resources . . .

Malawi resources:

- **Ministry of Natural Resources, Department of Forestry** – Forestry Officers, Assistants and Patrolmen are there in your districts ready to help you with all your tree needs. If they don't know the answer, their supervisor will be able to locate the information / resource that you need. Box 30048, LL3. 01-771-000/068
- **Community Partnerships for Sustainable Resource Management in Malawi** - Phekani House, Glyn Jones Rd., P/Bag 263, BT. Tel/fax: 01-622-800. <http://www.COMPASS-Malawi.com> or dai@dai.com
- **Information centre for Food & Fuel Security Promotion / Programme for Biomass Energy Conservation in Southern Africa (IFSP Mulanje)** / german technical cooperation, Box 438, Mulanje, Malawi, 01-466-279, tel/fax 01-466-435, ifspmulanje@malawi.net. Trainings on Food & Fuel emphasising on the role of household energy saving technologies (stoves, food warmer) and techniques (kitchen and firewood management) combined with food processing methods for overall food security and livelihoods. Interventions on 'Health & Fuel', showing the benefits of saving energy for the health situation of the energy users, with a special link to nutrition for HIV/AIDS clients.
- **FRIM – Forestry Research Institute of Malawi** - Box 270, Zomba. 01-524-866.
- **ICRAF – International Centre for Research in AgroForestry** - Box 134, Zomba. 01-534-250
- **National Herbarium and Botanical Garden** – Box 528, Zomba. 01-525-388/118/145. nhbmg@malawi.net Also a Lilongwe office
- **Mulanje Mountain Conservation Trust** – Box 139, Mulanje. 01-466-282/241. mmct@malawi.net.
- **Public Works Programme & Total Land Care** also do work with Tree nurseries but I can't seem to find their contacts right off. Ask around and your Forest person should know!

Internet links: (A search will give you a lifetime of resources!)

- **The Overstory:** <http://www.agroforestry.net/overstory/ovbook.html> or overstory@agroforestry.net
- **World Rainforest Movement:** www.wrm.org.uy
- **Forest Peoples Programme** www.forestpeoples.org
- **Rainforest Foundation** www.rainforestfoundationuk.org
- **Down to Earth** www.dte.org
- **Natural forests** naturalforest@ecoterra.net (Protection of the old-growth, natural forests and its peoples)



**Permaculture Network in Malawi
Quarterly Newsletter**

Newsletter Editors, Kristof & Stacia Nordin
Post Dot Net X-124 Crossroads,
Lilongwe, Malawi

*“See the world through the eyes of
Permaculture”*

Place Stamps Here

To:

Nthawi ya Dzuwa ndi Nthawi ya ‘Mulch ndi Compost’!

Tiyeni, Join the Permaculture Network!

- **Benefits** include quarterly newsletters with advice on Permaculture, improving nutrition, local food & medicinal plants, resources, creative ideas, and contacts of people in Malawi who are also trying to live a sustainable life.
- **Fees** are 400 mk for the calendar year. Paying more sponsors groups who can't afford the fees.
- **Memberships** are for the calendar year. If your mailing label includes **“Payment Due!”** *please* send your membership fee for the years written on your label. If you can't afford the fees, write us explaining why you are unable to pay, why you want the newsletter, and what you are trying with Permaculture.
- **Send payment** in the form of a Malawi Kwacha check or postal order addressed to Stacia Nordin, or Malawian postal stamps. Include your name, address, all contact details, profession & specific permaculture interests and send to: Permaculture Network in Malawi Newsletter Editors: Stacia & Kristof Nordin, PO Box X-124 Post Dot Net Crossroads, Lilongwe, Malawi

Submissions to the Newsletter:

Each Permaculture Network Newsletter has the sections: Permaculture Highlight, Resources & Member News. The other articles are based on a theme that is always posted in the previous issue so that you can prepare articles along the theme.

We welcome submissions for any section and would love to see articles from new people!
Send your submissions to: Permaculture Network in Malawi Newsletter Editors, Stacia & Kristof Nordin,
Post Dot Net X-124 Crossroads, Lilongwe. Or via e-mail at: nordin@eomw.net

Next Issue: Community Organizing