



Johnny Ipil-Seed News

The quarterly newsletter of *Trees for the Future*
Special Issue on New Ideas Fall 2006 Vol. XIV, No. 3

West Africa Update: Biodiesel from Jatropha - A Tree For OUR Future

Trees for the Future is working with projects in West Africa that are on the cutting edge of agroforestry. It is truly an exciting time to be an agroforester in the African sahel; working side-by-side with African farmers and several local partners, we are fine-tuning an agroforestry system that - in addition to combating desertification and increasing farmers' revenue - produces biodiesel that is now being used to run entire towns!

At a time when greenhouse gases, our dependency on fossil fuels, and outrageous gas prices all weigh heavily on our minds, it is a pleasure to be part of this action-based, solution-oriented program.

The African sahel is suffering from



desertification as the Sahara desert encroaches southward. **In such a resource-poor area, the development of a locally-grown, alternative fuel source is a miracle for poor communities where gas already costs \$5.00 per gallon.**

The magic behind this development began in the 1930's and 40's when European colonizers introduced a bush, known in English as the physic nut (*Jatropha curcas*), to West Africa. During the turmoil of World War II, researchers began searching desperately for alternative energy sources and jatropha was among the most promising. Building on a resurgence of interest in alternative energy sources, we are now

Above: John leads a training session in southern Mali. Left: Visiting a newly planted field of Jatropha in Keleya, Mali.

Johnny Ipil-Seed News is a quarterly newsletter of TREES FOR THE FUTURE, Inc., a nonprofit organization dedicated to helping people of the world's poorest communities to begin environmentally beneficial, self-help projects.

This newsletter is printed by wind energy on recycled paper with soy-based ink and is sent to all supporting members to inform them of recent events, plans, financial matters and how their support is helping people.

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Opinion: New Ideas - Diversity in Action

Looking back over a lot of years to the days when we helped people plant one, or a few, species of trees to meet a specific need, I remain amazed at how *your* program has diversified. We are responding to an ever-growing recognition that if we truly want to help people and the environment, we must be able to provide what is now called a holistic approach.

As I write this, **John Leary** is in Mali helping people to start projects and learning how they are making the desert meet a great range of needs, not the least of which is bio-fuel (see cover story) to address the growing energy crisis.

Brandy and Hamid Lellou have joined with us as volunteers, giving them the chance to follow their star: to develop a program treating waste water through natural

processes with aquatic plants and wetlands, while also finding new water resources in desert lands.

A few weeks back, I was in Honduras with TREES leader, **Guillermo Valle**, at the office of the **First Lady** where we were part of a team designing a "Forest Garden" program that will address massive malnutrition in elementary school students.

Using malnutrition as an example of how the technologies being developed by our many partners can work together, consider that one big reason these children don't get enough protein, in a country with a diet big on tortillas and beans, is that firewood is in very short

supply. For this reason children eat roots - cassava cooks much quicker than beans. The Forest Garden will give those schools a large and sustainable supply of food - and the fuelwood to cook it!

Recently we met a man from right here



TREES' Director, Dave Deppner, delivers a speech during the Chesapeake Bioneers conference at Pogo Organics Farm in Maryland.

in Montgomery County, Maryland, who calls himself **Pogo**. How many of us are still around who remember **Pogo's** famous comment, which now seems so prophetic to the environmental community: "We have met the enemy and he is us!?" I think this guy remembers.

Pogo found a piece of land, a farm way off the road that apparently nobody wanted - even here in suburban Washington DC. He put most of it in a forest conservation program, with trees now nearly 100 feet high. He saved five acres and on this he is building his empire - **of unwanted wood**.

He gets more and more such trees every year because even the small rise

Opinion: New Ideas - Diversity in Action

in average temperatures is already kicking off more, and bigger, storms right here at home. Now when hundreds, and possibly thousands, of these trees are either blown down or drop tons of branches in a single evening, you have a really expensive landfill problem...unless somebody finds a use for them.

On the other hand our local government, like most bureaucracies, sees fallen trees as a real, very costly, pain in the behind. They send the broken branches, trunks and stumps to a landfill about 75 miles to the west. The dumping fee is over \$400 per truckload. Figure the mileage, the fuel for a big truck, plus the driver's pay and you're close to a thousand bucks to get rid of a tree nobody wants - except Pogo and a few more visionaries like him.

Somehow, until we met Pogo and his staff, our experience in the Developing World had not prepared us to think about unwanted trees. We couldn't imagine that people pay to have a dead tree carted away. Wood remains the primary energy source for more than half the people on earth. In the villages we serve, all you would need to say is "anybody want a tree?" It would be gone in seconds. That is not the case here.

The Chinese say there are more than 5,000 benefits from trees. They've been at it for a long time but, even in our very short experience, we've already found more than 50. Now Pogo and several other far-thinking people are on the way to showing the world a few new ideas. These ideas take on special importance as we try to come to grips with global warming and a rapidly growing energy crisis.

Pogo's business needs all the wood he can get. He has a mountain of it, turned first into wood chips. In cleaning them he also produces marketable compost, never enough to meet the growing market in a place where

people are worried about our dying Chesapeake Bay and looking for ways to save it.

He's hired several bright young people like **Kevin John Richardson**, people with degrees in subjects like organic chemistry, microbiology and the study of fungi. He turns them loose in his 5 acre playground where they are coming up with impressive ideas. Right



Kevin Richardson explains Pogo's system of wastewood management, as well as his research to develop an improved manure tea, an effective alternative to chemical fertilizers.

now they gather used cooking oil from the many restaurants in the area (they say oil from Chinese restaurants is the best) and refine about 400 gallons of bio-diesel a day to keep the big fleet of trucks and tractors running. They have found ways to use fungi to break down the remaining glycerides into usable products. By next year they'll be making organic fuels from the woody biomass.

Fungi are also helpful in bringing back degraded soils, cleaning up oil spills and offering other benefits. One of the exciting ideas coming from Pogo Organics is an improved version of "compost tea" which brings back the soil organisms destroyed by heavy applications of dangerous chemicals.

Other groups we work with see so much value in things our bureaucracies are trying to bury in landfills that they are starting businesses, using the proceeds to bring trees and forests back to local parks and recreation areas, and providing funds to help build our program in developing communities.

The continuing destruction of our surroundings, our climate and our environment is both frightening and discouraging. But we feel there is reason for optimism knowing there are so many of these bright and determined people coming up with practical, money-saving, even fun ideas to make things better.

Handwritten signature of Kevin Richardson.

A Tree for OUR Future - Biodiesel from Jatropha - from page 1

showing farmers how to integrate it into diverse agro-forestry systems that advance biodiesel production and utilization farther than it has ever gone.

Several towns and villages are now running all of their lighting, grinding machines, tractors, and even some pick-up trucks, off of jatropha biodiesel.

Why Biodiesel?

Biodiesel is a locally produced, renewable fuel that can be made from animal fat, vegetable oils, or recycled restaurant grease. In our work in Mali and Senegal, it is being made from the oil that is pressed from the seeds of the jatropha bush.

Biodiesel offers numerous benefits over petroleum diesel. It reduces CO2 emissions by more than 75% and it also reduces particulates, carbon monoxide, hydrocarbons, and other toxic emissions. The environmental benefits are obviously not a hard sell, but is it economically feasible? YOUR ANSWER: Absolutely! We are growing, collecting, processing, and utilizing jatropha biodiesel for HALF the cost of petroleum diesel!

Naturalization in West Africa

When jatropha trees first came from Nicaragua over 70 years ago, they were quickly naturalized into local brush lands and crop fields. West Africans plant jatropha in living fences; the strong, fast-growing branches quickly create an effective hedge that keeps animals out of gardens. For the past 50 years Malian women have also been making soap from the oils produced by the seeds. Because communities have so much prior familiarity, the adoption of techniques to create jatropha biodiesel have been simplified - this is in contrast to an idea like solar ovens which, though they are a great idea, are very foreign to local cultures and seem to bring with them cultural barriers.

Diversity, Diversity, Diversity

Because it is the seeds that are used in the production of biodiesel, we immediately must ask how we can maximize seed production. The living fences that are so common throughout Mali - **Mali contains 17,000 km of jatropha living fences** - are not good sources for seeds. When bushes are planted so close to each other, literally a couple inches apart, the root develop-

ment is hindered. This in term limits the plant's ability to produce seeds.

Part of this solution is to leave more spacing among bushes and plant them plantation-style, giving each bush room to grow. The word *plantation* is not necessarily a bad word, but it is not something we go around encouraging anyone to do. One of the online dictionaries defined a 'tree plantation' as: a type of garden consisting of cultivated trees without undergrowth. This makes us jump out of our seat! Who would ever want something like that! Undergrowth is 50% of the potential of any field!

Everywhere we visited during a recent trip to Mali,



The 'Father of Jatropha', Aboubacar Samake, left, with agronomist Bryan Berenguer, right, next to jatropha bushes at the National Center for Solar and Renewable Energy in Bamako, Mali. Photo by Leary.

we spoke with farmers, project and government leaders about the importance of diversifying jatropha plantations, and we have happily received an outstanding response. When discussing with local technicians how to mix a variety of fruit trees and forestry trees, vegetables, and field crops in, on, around, under, and above the jatropha bushes, their eyes lit up, leading to some exciting discussions about ways to diversify jatropha fields.

Examples of Forest Gardens with Biodiesel

Maka Samake, one of the farmers working with us in southern Mali, is planting rows of jatropha among rows of mango and soursop trees. Other farmers are planting peanuts, watermelon, or squash beneath their jatropha trees. Omar Ndao, TREES field rep in Senegal, is combining leucaena and other fast-growing trees among rows of jatropha in hedgerows. Interestingly enough, Omar also has several jatropha bushes fruiting plenty of seeds beneath the canopy of large cashew trees. The possibilities - and potential benefits - seem endless.

Getting Started

We are growing and planting jatropha in three main ways. The easiest way is to take a large, half-meter long cutting and stick it in the ground - similar to how we plant manioc or cassava.

As our plant biologists begin to poke their nose in the project they explain that for better root development it is best to start from a seed, not from a cutting. Thus we are also direct seeding jatropha seeds (with limited success) and propagating seedlings in nurseries. Most of the communities in Mali are growing seedlings using plastic nursery sacks; Omar in Senegal is growing them in bareroot beds.

Our farmers do NOT have to wait long before harvesting seeds; newly planted bushes can produce as much as 7 to 8 pounds of seeds in their first year!!

Collection

With 120 farmers in their seed collection network, the town of Keleya in southern Mali is collecting enough seed in the surrounding villages to produce electricity for all the government buildings, all the street lamps, and dozens of families. It takes about 5 kilograms of seeds (11 pounds) to produce one liter of biodiesel, and this is being done for a cost of about \$2.00 per gallon.

Processing

This is a very appropriate technology for rural Africa because every step can be done in-country with local technology. Local people collect, shell, and sell the seeds to centralized buyers. The seeds are dried in the sun for a day or two before being dumped into a press.

One of the major bottlenecks in the utilization of jatropha biodiesel is the lack of appropriate presses. With the help of the engineers in the Malian military, there is now a locally made press that also runs off of the same biodiesel that it is squeezing out of jatropha seeds.

The oil that is extracted is then left to decant for 24 hours. The sediment is used by local women's groups to make soap, and the good oil is ready to be used in a variety of automobile and stationary engines.



John visits an electric generator that runs on locally-grown jatropha biodiesel.

Plans for the next year

Trees for the Future will continue to work with our network of partners in Senegal and Mali to advance jatropha propagation and utilization. We are excited to develop new partnerships with the **Malian Association for the Conservation of the Environment**, the **Mali Folkecenter**, and the **Malian National Center of Solar and Renewable Energy**.

One of our main goals is to help farmers to plant diverse agroforestry systems that combine jatropha bushes with fruit trees, timber producing species, other grains and vegetables and root crops. Diversity, both for environmental and economic security, is a key ingredient in the success of this burgeoning use of biodiesel in West Africa.

Producing biodiesel while also reforesting degraded lands, combating desertification, diversifying farmers' production, and increasing annual income are paramount to a sustainable future. Here is a solution in which combating climate change, reducing poverty, and conserving the environment all converge.

Preserving Biodiversity & The Magic of Neem in Southern India

Contribution by Subramanian Periyasamy, TREES Field Rep

Prior to 2004, a 50-acre area in Melkachirappattu was dry and desolate with only a few scattered trees. With Australian and American partners, this area is now part of a greenbelt corridor - a peaceful sanctuary of self-regenerating forest with wide abundant diversity. There has always been a strong emphasis on conservation of indigenous plant species in southern

India, and during these last years there has arisen a particular focus on medicinal plants.

Neem in Indian culture has been ranked higher than 'Kalpavriksha', the mythological wish-fulfilling tree. Neem is named 'the blessed tree', because of its beneficial properties.

The Bio-region in which we work surrounds the large lake in

Tiruvannamalai and extends North and West. Now teams of young botanists are working with us. By accessing the local knowledge, often via the memories of the traditional healers, the team has determined which plants are

endangered in the region. Only a few thousand acres remain of the green forest that was unique to this area. The situation is critical. Seeds are constantly being collected from the area's remaining trees and sacred groves, and with the **Rural Development Afforestation Society (RDAS)** we are also working with communities to propagate neem and other types of fast-growing trees in nurseries.

By planting seedlings in ethno-botanic gardens in protected areas, living seed banks are being assured. Seedlings are also planted in village medicinal plant gardens, schools, sacred groves and new forests. We are working hard to get communities involved in this work as much as possible.



Subramanian, TREES Field Rep and leader of the Rural Development Afforestation Society (RDAS), plants neem and a variety of other trees with farmers in the Tiruvannamalai area.

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Through the local **Bio-Resource Centre**, we are working with other technicians to train communities in propagation, planting, protection and the use of trees and medicinal plants. In addition, we are encouraging the participation of local traditional healers.

Neem & the Environment



Neem products, including soaps and tooth-paste, are now sold in stores throughout the US.

India is an agro-forester's dream because of the

large number of indigenous tree species that have remarkable properties. One such tree is neem, *Azadirachta indica*, which has numerous medicinal properties and can be used to create a natural pesticide and repellent that control a wide variety of pests. Remarkably, neem pesticide is not a poison like the chemical pesticides

Subramanian estimates that the environmental and economic benefits of a single neem tree averages over \$10 a month.

we are so familiar with; you can apply neem solution on your garden today and eat the vegetables tomorrow!

Pesticides made by neem tree parts (seeds, leaves, and bark) are biodegradable and non-toxic. Neem products cause no harm to humans and animals, and

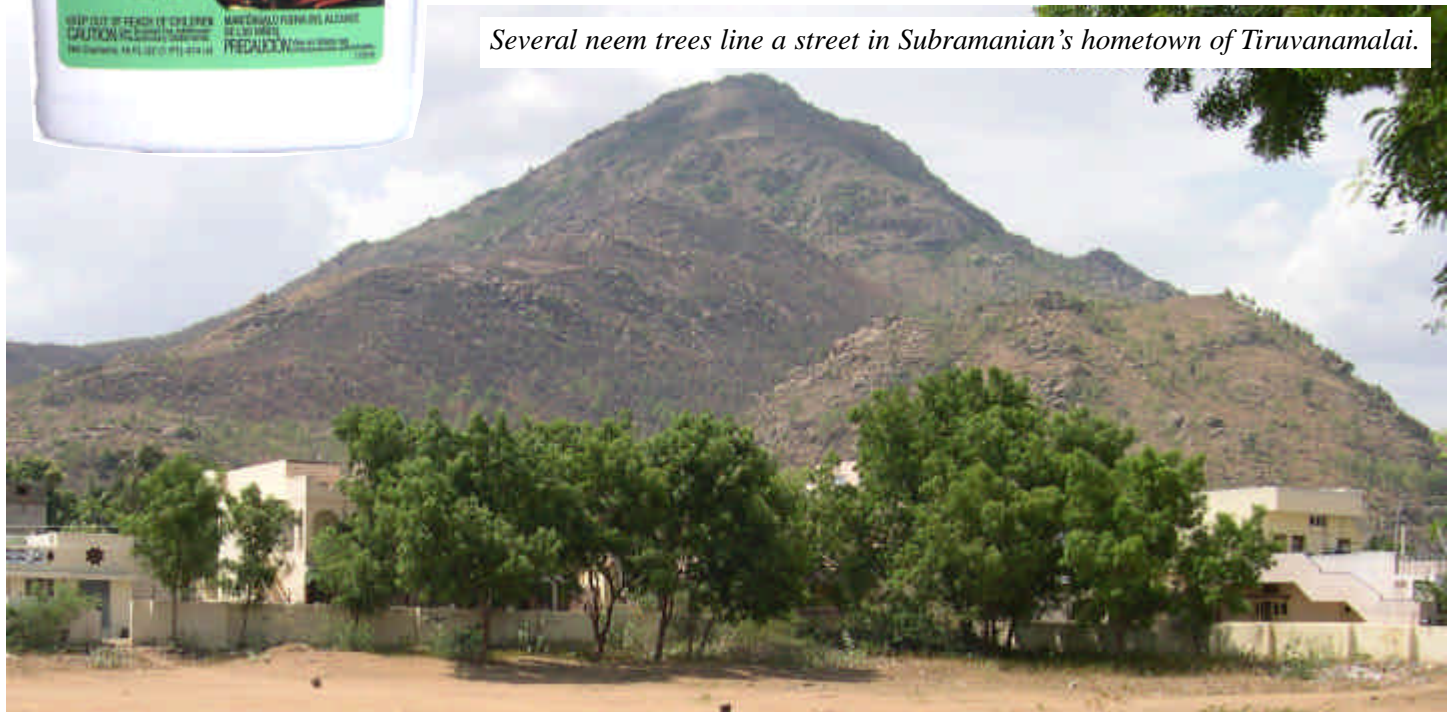
they have no residual effect on agriculture products. For these reasons neem is now

used throughout the world as a major substitute to hazardous pesticides.

Neem trees are a big part of our reforestation work in semi-arid regions in India. While neem is a popular species for sustainable forestry projects, it is also extremely useful in urban forestry because it has remarkable ability to withstand air and water pollution. Though we do not recommend planting neem trees inside crop fields, they are often used to create wind-breaks around croplands and they help in restoring soil fertility on degraded lands. Its seeds are food for fruit bats and birds, and the wood is termite resistant.

Due to all of these benefits, over the past 100 years the neem tree has become a popular tree for agro-forestry projects world-wide.

Several neem trees line a street in Subramanian's hometown of Tiruvanamalai.



Introducing: Brandy & Hamid Lellou



Brandy and her son in the Sahara Desert

From Colorado, by way of the Sahara, **Brandy Lellou** has become our resident cowgirl. She and her husband **Hamid** are serving TREES as volunteers.

Brandy is a civil engineer who went to Mauritania as a Peace Corps Volunteer, working in the fields of health and water sanitation in a land where water of any quality is hard to come by.

After Peace Corps, she worked at the U.S. Embassy as a maintenance officer, helping to develop waste water treatment systems. There she met her husband Hamid, who has been working in sustainable development and eco-tourism for more than 12 years, working extensively with the *Banc D'Arguin* National Bird Park to preserve that delicate environment as eco-tourism increases.

Together they formed a local NGO called "Nature's Voice - Our Choice". They developed a successful pilot project for waste water treatment using aquatic plants and constructed wetlands.

Now they've come to the States. Brandy is working to see that people have cleaner, more accessible water while Hamid builds his eco-tourism business.

At TREES, we see the growing worldwide shortage of potable water as an increasingly critical need for our program. We also see eco-tourism as a means to educate people on the issues and challenges faced by developing communities; a better-informed public will provide the needed support. TREES is benefiting greatly by what Brandy and Hamid have to offer. Their story begins below:

***Nouakchott, Mauritania:* FINDING VALUE IN WASTE**

In the desert village of **Ksar Terchane**, in the Northern Adrar Region of Mauritania, West Africa, water is the most valuable resource. Villagers live on less than 2 liters (1/2 gallon)/day including drinking, cooking, bathing, and washing dishes and clothes. Traditionally desert nomads, Mauritians have become experts in water conservation; not a drop is wasted.

- + **When thirsty you drink milk**
- + **Dishes are washed without soap so that the goats can drink the left over water**
- + **Bathing is done with a (teapot), permitting a decent bath with only a liter of water.**

However in the late 70's drought and increased desertification began to alter their lifestyle, first requiring settlement in oasis villages in order to find water and grow food. Later, as wells dried up, grazing forage for goats ceased to exist, firewood became impossible to find, and as the hot desert winds became relentless, many began to migrate to the cities in search of work. The capital, Nouakchott, has grown from a population of 200,000 to over 1

million in the last 15 years. As a Peace Corps Volunteer, I traveled from Ksar Terchane to the capital city every few months and witnessed this transformation. I watched as one by one, families from the village loaded up all their belongings in the back of a pickup, piled on top, and headed off to Nouakchott with the



Drought and increased desertification have brought this once nomadic population into the capital in search of work

promise of a better life in a place which many of them had never visited. As I watched, I couldn't help thinking of "The Grapes of Wrath". Like many large cities in the developing world the population growth does not match the infrastructural growth. Therefore, the majority of the population lives in shanty towns on the

The wrath is felt daily by these former villagers who once enjoyed the beauty and cleanliness of open spaces.

This problem is not specific to Nouakchott, it exists throughout the developing world in large cities that

Nearly 50% of the population in developing countries now live in urban areas, many in unsanitary slums. This number is expected to increase by 1 billion within the next 10 years. The urban poor often live in worse conditions than rural poor because all services require a cash income; food and water can not be obtained from the land. They must be purchased, thus leaving more than a billion urban dwellers with no access to potable water, perpetual problems with malnutrition, and epidemics of cholera, malaria, and other diseases.

peripheries of Nouakchott. Although their environment has changed, the need to conserve water has not.

For the majority of these families living on the peripheries of Nouakchott, access to running water does not exist and buying water in barrels is 10 times more expensive than tap water in the city's center; thus making agriculture production nearly impossible. Market gardeners previously tapped into the city's main line that pumps water from an aquifer 60 km (37 miles) east of Nouakchott. However, increase demand in Nouakchott's affluent neighborhoods required the city to regulate and prohibit this activity.

In addition to the problem of potable water access, peripheral neighborhoods have become the dumping grounds for waste water (from septic tanks that have been pumped from affluent neighborhoods). This waste water was once dumped at the edge of town, however as the city grew and the price of fuel rose, the trucks began dumping in open lots in the shanty towns.

Also the dumping grounds for solid waste, these areas have become waste swamps filled with mosquitos and horrific odors - a health hazard nightmare. The poorest of these neighborhoods is called 'Kebbah' which in Hassaniya language means 'garbage'.

have an influx of people searching for ways to survive after their lands have become uninhabitable due to desertification, deforestation, erosion, soil salinity....

In November, 2003, motivated by an idea from former US Ambassador to Mauritania, John Limbert, my husband, Hamid Lellou and I started a local Nonprofit Organization called Nature's Voice - Our Choice to work on treating this waste water using aquatic plants found in the nearby Senegal River. The goal was to create a pilot project that could:

- + be duplicated in peripheral neighborhoods
- + be constructed locally with minimal expense
- + function using only manual labor
- + be operated and maintained by local women
- + treat domestic waste water to World Health Organization standards for irrigation of vegetables.



Though slightly out of focus, here is a close-up shot of the sequence of Brandy's retention pools in the lot behind her apartment building. In the first one you can see the large leaves of the water hyacinths.

The lot adjacent to our apartment complex was being used as a garbage dump and leech field for the septic tanks serving the apartment building. The landlord agreed to let us use this lot as an experiment in "What is possible", in exchange for finding a solution to his waste water problem.

The oldest method of waste water treatment is aerobic decomposi-

Nouakchott, Mauritania: FINDING VALUE IN WASTE

tion through natural processes (flow of water over rocks and plants, through sand, and in streams where bacteria break down the waste). Natural aerobic decomposition of wastewater is a long process, but it is possible to recreate nature.

How? Five basins were constructed down gradient from one another so that water would flow by gravity.

Wastewater from the septic tanks was routed to the first basin containing aquatic plants. As each basin fills with waste water, aquatic plants are introduced and the

flowrate controlled so that the initial water entering the tank has a retention time (contact with the plants) of 8 days. The water was then passed horizontally through sand and gravel in a constructed wetlands.

There are numerous types of aquatic plants that can be used in wastewater treatment; however, for this project we chose water lettuce and water hyacinths for the basins and cattail and bulrush for the wetlands due to their proven effectiveness in other experimental projects and availability in the nearby Senegal River. Water lettuce and Water Hyacinths are buoyant and grow on the surface of fresh water streams, rivers, and lakes. The plant roots provide an ideal environment for aerobic bacteria to grow. The contact of waste water with large surface areas of aerobic (good) bacteria is the process of aerobic decomposition during secondary treatment. For irrigational purposes, recycled water may be used after secondary treatment. At this stage harmful bacteria and chemical levels have been sufficiently reduced and the remaining inorganic compounds primarily (nitrogen, phosphorus, and potassium) are beneficial to the soil as

an alternative to chemical fertilizers; replenishing nutrients that are lost during crop production.

Aquatic plants reproduce quickly requiring a third of them to be harvested twice a week. Harvesting the plants involves simply removing them from the water with a pitch fork. The harvested plants

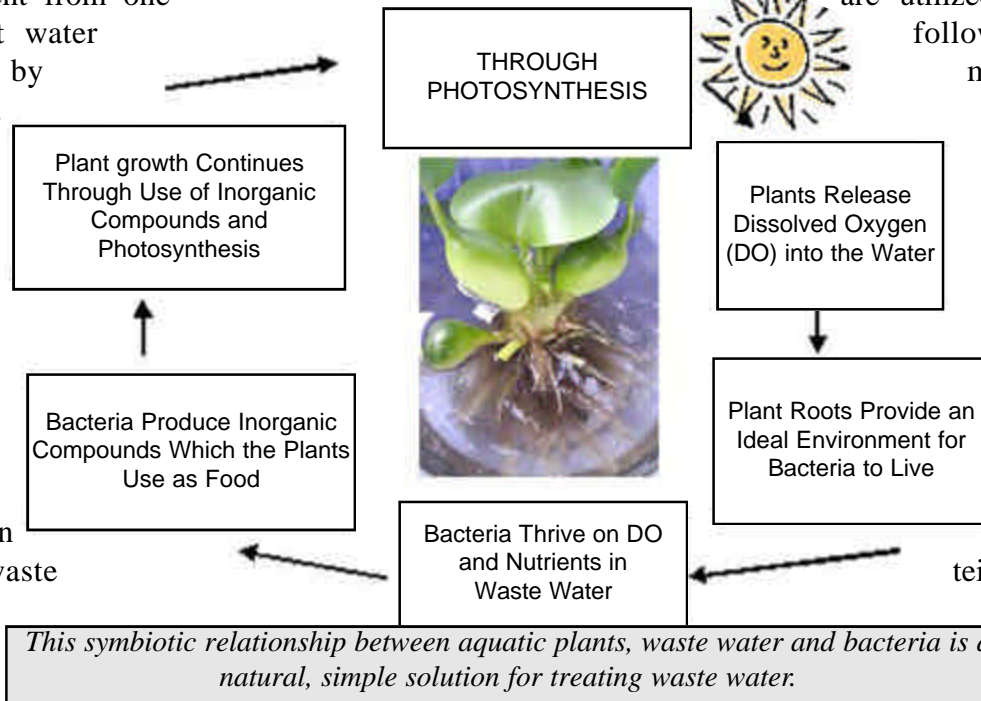
are utilized to produce the following products:

mulch, compost, silage serving as a high nutrient animal feed. (Dried Hyacinths contain the following nutrients: 26% fiber, 26% crude protein, 17% ash, and 8% carbohydrates.

We trained a

team of six Mauritanian women for one month in the operation and maintenance of the system, as well as health and socioeconomic impacts. **The women continue to operate the system producing 1000 liters of treated water/day that is used to irrigate a 900 square meter plot of land producing vegetables, trees, ornamental plants, animal feed and a continuous source of income for their families.** Women who once woke each day wondering what they would feed their families have now found value in preserving the desert's scarcest resource.

Nature's Voice - Our Choice envisions larger systems implemented on government donated land in each of the city's peripheral neighborhoods creating 'Waste Water Treatment Parks'. Local cooperatives would maintain these systems and use the treated waste water to create lush "green spaces" producing an abundance of vegetables and trees, a continuous source of compost fertilizer and animal feed, and beautiful green spaces bordering the city; providing refuge on those hot dusty Saharan summer days.



Update from the Philippines: **WORKING ASSETS and the Volcano**

I was a fairly new Peace Corps Volunteer when I first saw **Mount Pinatubo** in 1973 - about the time some of us were starting to work on the idea of bringing trees back to degraded lands.

The job I was assigned was in a village called **Villar** on the slopes of the mountain. Most of the people there were called "Aetas". They were the original inhabitants of the Philippines: short, slight and very dark people with tight curly hair.

They live a much different life. Not too many generations before they had been headhunters. One friend of mine, an Aeta who now lives in Shaker Heights, Ohio, says a marriage between his mother and father only took place when his father was able to bring in the head of a Christian. The men would file their teeth to a point when they were in a mood to take heads. Fortunately for me (while I was there) their teeth remained flat.

Originally, the Aeta had been forest people. Early in the 20th century logging became so intense that the entire mountain range was cleared, protected only by a tall, tough grass called "Cogon".

Without much choice, the Aetas adapted well to their new circumstances. They could move quickly and silently through the grass. The tips of their arrows were dipped in poison and brought in a continuing supply of meat: deer, wild pigs, monkeys - and not a few pythons.

It all came to an end in October of 1992 when Mt. Pinatubo blew its top. The lowlanders, for once, were on their side, bravely driving 6x6 trucks up those steep hills, with the earth shaking and balls of fire flying through the sky. What courage that must have taken. They evacuated over 5,000 families and only lost one man, who panicked and jumped from the truck screaming, never to be seen again.

From there it was the refugee, more correctly concentration, camps where they languished for six years before it was determined safe enough for them to go back. To what? Villar, where I had spent so many weeks, was now buried under a hundred feet of vol-

canic ash. But the Aetas at least were home.

For eight years now, TREES has been helping the people of these uplands overcome the devastation and develop sustainable livelihood projects. Along the way, we met **Gabby Mondragon** who has lived up there for some years and has proven a champion at taking useful technology and integrating it into the Aeta culture. With him, we learned that trees could be planted in the lahar (volcanic ash) and the trees quickly add humus and nutrients so that the soils are able to produce again.

Last year, the people at **Working Assets** (www.WorkingAssets.com) a charity-minded telephone consolidator located in San Francisco, took note of the effort of these people to rebuild their lives. They provided a grant that allowed the planting of 85,000 trees in the community which is now being called **Bagong Buhay (New Life)**.

These trees cover about half of a mountainside just



Some of the thousands of seedlings that are now being planted onto the barren mountainsides seen in the background.

across the river from the training center Gabby has helped the Aeta develop. The mountain has a high waterfall which, unfortunately, runs dry in the long dry season. One goal of this project is to keep the waterfall running throughout the year. That's not just for aesthetic value: the waterfall will protect the fields in the event the dry cogon grass catches fire.

Since every activity, including rebuilding the soils, had to be started again and because there was no money around, the farming system had to be organic. A lot of it was "learn as you go". Japanese technicians quickly learned of the project and now regularly visit, spending their

days in the fields and their nights in the bahay kubo (grass shacks) looking often at Pinatubo towering over them. This sharing of technology and ideas has been beneficial for all.

We still have a half a mountain up there to reforest and hope that **Working Assets**, and some other good folks, will join with us to do that.

Meanwhile, we ask you, our members, to give Working Assets thanks for making this happen.

Shading the Coffee of Honduras

When that goat in Ethiopia first discovered coffee about 3,000 years ago, it was growing in a forest. Trees and coffee naturally go together.

Now, thanks to a grant from **Jason Long** at **Café Imports** in Minnesota, we have been able to quickly expand our program in the coffee and lake country of Northern Honduras.

Café Imports provided the grant to plant 83,000 trees - enough to annually offset all of the carbon emitted by their coffee importing business, including shipping it from all over the world. We now have quite a few businesses, especially those marketing coffee, who want to plant trees so they can be "carbon-neutral", meaning they don't contribute to global warming.

Ever since New Orleans met up with Katrina, there has been a rapidly growing number of people wanting to make their homes, their cars, their businesses carbon-neutral by planting trees.

Through this grant from Café Imports, many village projects have been established in the surrounding uplands where deep-rooted shade trees are being planted to improve the coffee and fruit produced there. Families of one such village, Serra Azul, are joining together to start a coffee and juice bar along a major highway running along the lake shore.

Two of the projects have been started on the north side of Lake Yojoa in the towns of **Peña Blanca** and **Las Vegas**. Local businesses have joined in to keep the program growing.

One mining company, high above the town of Las Vegas, has agreed to reforest most of their land - some 18,000 acres - and began by establishing a seedling nursery providing about 37,000 seedlings to nearby farmers. They also grow coffee on this land and their first year effort includes planting shade trees to



*AMUPROLAGO director **Jorge Betancourt** (right) and TREES volunteer **Mike Heilman** (left) visit the seedling nursery in Las Vegas. More than 37,000 seedlings were distributed to local families from this nursery. More are being planted..*

improve quality of the crop. TREES provided the seeds and much of the initial training for this project.

The electric company which depends on the Lake as the source of their hydro-electric power has also joined in, starting a large nursery, providing about 28,000 tree seedlings to reforest the uplands of the community of Peña Blanca.

Honduras has other pressing needs. With **Guillermo Valle**, our partner in FundArbol, we were invited to meet with the staff of the First Lady to discuss two other important concerns: first, almost one-fourth of all the elementary school children in Honduras can't meet even minimum class standards. The reason is malnutrition. We were asked to join their efforts by establishing "Forest Gardens" in as many schools as possible.

A second major concern is a growing shortage in the national water supply, especially in the long dry season. In major towns this has reached the critical stage. Tegucigalpa, the Capital, doubles in size and population every ten years. The *colonias* or suburbs have now nearly reached the peaks of the surrounding mountains. The increase in numbers of people, and the demand per person for water, is further exasperated by the loss of

Shading the Coffee of

open areas where trees once grew but which are now covered by houses and pavement.

This is a growing, worldwide, crisis that many nations, including the United States, must soon come to grips with. On the one hand we have more people with rising needs and expectations, and on the other hand is more degraded land no longer able to meet these needs. As FundArbol puts it: *sin arboles, no hay agua. Sin agua, no hay vida* (without trees, there is no water. Without water, there is no life).

Somehow, these barren lands must soon be restored as sustainably-managed forests. As we pointed out in the so-called "forested" uplands of the Tegucigalpa watershed, the only trees to be seen are Honduran Pine and these stand more than 30 feet apart on the average. That works out to only about 50 trees per acre, and these are pine trees that don't offer much to replenishing groundwater aquifers.

Our program recommends planting more than 600 trees per acre, right along with the Pine. Deep-rooted trees that hold water on the land and make it available during the long dry season. We are now providing seeds of several species of deep-rooted



Dave (not pictured), Jorge (left), and Mike (right) got the opportunity to sample coffee produced by the women's cooperative in Serra Azul.

They are planning to start a coffee/juice bar along the highway passing Lake Yojoa.

trees and the training needed to demonstrate that these nearly-barren uplands are capable of meeting the needs of the people of these cities for many years to come.



Guillermo (left), Dave (center), and Mike (not pictured) meet Ing. Patricia Alonzo (second from left) and her staff at the office of the First Lady of Honduras. We explained our program and offered seeds and technical assistance to the watershed and school programs.

Why Shade-Grown Coffee

All around the world, we work with coffee producers and also with the people who buy this coffee. Like the buyers, we do our best to get producers to plant deep-rooted shade trees around their coffee plants. There are several reasons.

First, nature made coffee a shade-loving tree of the forest. It's also the second most traded commodity, after oil, in the world. By the early 1970's, concern about the rapidly disappearing forests of the tropical uplands caused the development of a very different type of coffee that could grow faster, and produce more, in the open sun.

For some years it worked. But as so often happens when you try to trick Mother Nature, she has a way of making you wish you hadn't. There was a number of unforeseen management problems the growers had to address:

Without shade, there was considerable under-growth competing for the water and other soil nutrients. It was necessary to apply, more and more, herbicides to get rid of the weeds. And without the weeds, in the heavy rainstorms of the tropics, the soils quickly washed away.

Without the forests, there was no more leaf-fall from nearby trees, and no more bird and bat droppings to replenish the soil nutrients and organic matter. Now it was necessary to apply chemical fertilizer, which does not restore the "micro" elements so vital to the flavor and quality of coffee.

Without nearby trees, coffee became the only plant growing on these plantations. This made them an easy target for every insect that takes a fancy to coffee. With the birds now gone, there was no natural control against these pests.

What was left was trees that quickly matured and

produced coffee cherries but, year-by-year, the flavor and quality dropped. In their natural setting, coffee trees can produce for more than a century. In these artificial conditions, production was 25 years -if you were lucky. But more recently, with quality so low, and costs so high, the discouraged upland farmers began cutting the coffee trees to sell as firewood even though they were still producing.

Now look at it from an environmental viewpoint:

removing trees strips land of its biodiversity. For lack of trees, migrating songbirds no longer had a breeding ground. The land was no longer covered by protective forests. These trees had also held water on the land and directed it into underground aquifers. Instead, now these very fragile soils were totally unprotected against the strong seasonal rains.

Why is Central America suffering severe water shortages every dry season? Because, without trees to hold water in the uplands, 95% of the rain goes right back down the mountainsides and out to the ocean.

In these uplands, farmers generally have only two products to sell: coffee and cattle. In that situation, take the trees away on these steep slopes and you have some



Shade trees and crops grown with coffee in Honduras. This Forest Garden approach recycles nutrients and reduces soil erosion.

real problems.

Is there more to the story? Sure is. If we can get the millions of much-needed trees back on the denuded uplands, we can look forward to a return of our songbirds, we can provide workable answers to reducing the water crisis, we can help the people of these uplands to a higher standard of living. These trees also remove millions of tons of carbon from air, reducing the threat of global warming. And you get a great cup of coffee. Looks like a win-win to us. **What do you think?**

Heat Wave Broils Much of Nation

July 2006 Sets New Heat Records

National Climate Data Center

Location (City, State)	New Record
Atlantic City, NJ	99°F
Burbank, CA	112°F
Chadron, NE	112°F
Cottonwood, SD	117°F
Delta, UT	109°F
Douglas, WY	105°F
Fort Meade, SD	108°F
Hillsboro, OR	108°F
Interior, SD	114°F
Kelly Ranch/Usta, SD	120°F
Milesville, SD	116°F
Mobridge, SD	116°F
Philip, SD	116°F
Pierre, SD	117°F
Spearfish, SD	109°F
Stockton Airport, CA	115°F
Woodland Hills, CA	119°F

The impacts of Global Warming have been felt by communities around the world for many years now, but *this year* Americans really began to feel it at home; from the devastation of Hurricane Katrina to the punishing summer heat wave that swept across the nation. What some once considered scientific theories have now become tangible realities. The July heat wave caused the death of hundreds of people, damaged crops throughout the nation, and taxed electrical grids from New York to California causing numerous power failures.

GLOBAL WARMING

On the anniversary of Katrina, while politicians are making excuses and the press is raising awareness of the enormous public and private needs that still exist in the region, let us not forget the underlying current that caused this disaster.

Affordable, efficient solar energy systems are becoming popular in California.

Across the nation from New York to Nebraska to California, individuals, businesses, and industries are starting to invest in alternative energies and green building techniques that reduce traditional energy consumption and CO2 emissions. **Green roofs** are becoming more and more visible in New York; like the one we saw on an apartment building on 19th Street. Green roofs act as buffer to the elements, reducing energy consumption. In addition, the plants absorb CO2.



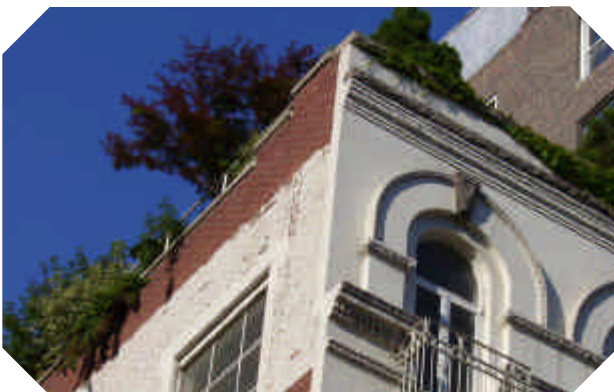
GLOBAL COOLING

Nebraska has one of the nation's largest **wind farms**; producing 100 million kilowatt hours in 2005, enough to power over 20,000 homes. The TREES headquarters runs on electricity produced from wind energy; it is now an option in most states.

If your looking for green in New York, try looking up; many existing roofs throughout the city are being retrofitted to green roofs.



Nebraska's wind farms are generating enough power to serve 20,000 homes.



With government subsidies, rebates, and tax incentives, **solar energy** is becoming more and more economical. The excess energy generated by solar energy systems can often be sold back to the grid - your meter actually turns backwards! A 10 KW solar energy system will eliminate 23,570 pounds of CO2 from entering the atmosphere every year. It is now economically and technologically possible for the average American to invest in energy conservation and alternative energy systems, especially now that petroleum fuel costs are increasing. Research alternative energy; you'll be surprised.

Inside

As we celebrate 10 years of the passing of Loret Miller Ruppe, your program continues to search for more ways to improve the livelihoods of people living on the world's degraded lands. This special issue of the Johnny Ipil-Seed News shows some of the remarkable ways that trees are helping people.

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FALL EVENTS

We're on the road and hope to see you.
More info at www.plant-trees.org/news.htm

AltWheels - Boston - Sept. 22-24

Green Festival - Washington DC - Oct. 14-15

Chesapeake Bioneers - Wash. DC - Oct. 20-22

Green Festival - San Francisco - Nov. 10-12

Green Festival - Chicago - April 21-22, 2007

**Combined Federal Campaign
Trees for the Future is part of the
Aid to Africa Federation
CFC# 9965**

E-Newsletter

Every month, Trees for the Future sends out an **e-newsletter**. Sign-up by going under "Join the Mailing List" on www.plant-trees.org and entering your email address.



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