

Agroforestry a global land use



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Agroforestry a global land use

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Photo: Stevie Mann

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Our Vision is a rural transformation in the developing world where smallholder households strategically increase their use of trees in agricultural landscapes to improve their food security, nutrition, income, health, shelter, energy resources and environmental sustainability.

Our Mission is to generate science-based knowledge about the diverse roles that trees play in agricultural landscapes and to use our research to advance policies and practices that benefit the poor and the environment.

Our Values We strongly adhere to shared core values that guide our work and relationships with colleagues and partners:

- Professionalism
- Mutual respect
- Creativity

Our Focus We pay particular emphasis to four areas in our work:

- Accelerating impact
- Enhancing science quality
- Strengthening partnerships
- Improving operational efficiency

MESSAGE FROM THE CHAIR AND DIRECTOR GENERAL



Lynn Haight
Chair of the Board of Trustees

This has been an extraordinary year for the World Agroforestry Centre. Most significantly, we hosted—along with the United Nations Environment Programme—the hugely successful 2nd World Congress of Agroforestry, which brought together close to 1200 participants from 96 countries.

During the four-day Congress in Nairobi, we had the unique opportunity to showcase recent advances in agroforestry research and raise the profile of agroforestry worldwide. The Congress helped to create stronger networks among researchers, policy makers and practitioners. There is no longer any doubt that agroforestry has come of age as a robust, science-based discipline, as well as a major land use at the global scale.

A new study, described in the following pages, provides definitive quantitative evidence of agroforestry's importance. Over 1 billion hectares of agricultural land – almost half of the world's farmland – are observed to have more than 10% tree cover, and 160 million of these hectares have more than 50% tree cover.

These new results, combined with the increasing density of trees on farms observed in many countries, show that farmers across the tropics are relying

more on agroforestry to shape a better future for their families and for the environment. The evidence is clear: agroforestry can enhance food security and improve rural livelihoods, and it can increase soil fertility and crop yields. Indeed, trees on farms are now seen as one of the most promising means known to better adapt farming systems to climate change, and to absorb carbon dioxide in the battle to moderate global warming worldwide.

This was a particularly important year not just for us, but for the planet, with all eyes on the international climate-change negotiations, culminating in Copenhagen in December 2009.

Deforestation accounts for some 20% of greenhouse gas emissions, and it is now widely accepted that REDD – reducing emissions from deforestation and forest degradation – should be a key component of the climate change agreement that replaces the Kyoto Protocol. Our research strongly suggests that the agreement will only be successful, however, if it recognizes the critical role that smallholder farmers can play in reducing emissions, and in sequestering carbon by planting trees on farmland.

It is this message that the African Biocarbon Initiative, launched by



Dennis Garrity, Director General


the Common Market for East and Southern Africa (COMESA) and the World Agroforestry Centre, is promoting in the lead up to the Copenhagen climate negotiations. If poor farmers are able to capture just a small fraction of the investment flow in projected carbon markets, agroforestry projects could dramatically reduce poverty, and at the same time remove billions of tonnes of carbon dioxide from the atmosphere.

This report highlights the breadth of our exciting agenda and achievements, from research on nitrogen-fixing trees that increase crop yields to the domestication of indigenous fruit trees; improving market access for smallholder farmers; providing evidence for crucial policy reforms; developing new ways of measuring soil health; and researching the best ways to disseminate information to farmers.


We made considerable progress during the year in implementing our new strategy. Our scientists have responded vigorously, with the number of peer-reviewed journal publications rising by over 43% in 2008. Our financial situation has remained healthy and stable. And we continue to wholeheartedly support and contribute to the CGIAR Change Management Initiative.

Building on this highly successful year of creating broad awareness about the role of agroforestry and about our own work in addressing global challenges, we are in a stronger position than ever before to continue providing science-based solutions that transform lives and landscapes.

We thank our many donors and partners for their strong and unrelenting support to these important joint efforts.



This report
highlights the
breadth of
our exciting
agenda and
achievements

 Grafting superior varieties of citrus tree in a nursery in Malawi. (Stevie Mann)



A bird's-eye view. More than half a billion people live on farmland with more than 10 per cent tree cover (World Agroforestry Centre photo archive).

A MAJOR LAND USE – THE PROOF

Trees provide farmers with a range of goods and services, from fruit to livestock fodder, fuelwood to green fertilizers. But how much land is devoted to agroforestry? Until recently, we could only guess. However, a new study provides some solid figures – and a clear message about the importance of agroforestry.

A World Agroforestry Centre study used remote sensing data to analyse the extent of tree cover on agricultural land, and its relationship with population density and climate. Over 1 billion hectares of agricultural land – or 43% – have more than 10% tree cover, and these areas are home to almost a third of the 1.8 billion people who live on agricultural land. Some 0.6 billion hectares of agricultural land have more than 20% tree cover, and 160 million hectares more than 50%.

“Before we conducted the study, the only figures available were guesstimates,” explains Richard Coe, co-author of *Trees on Farm: Analysis of Global Extent and Geographical Patterns of Agroforestry*. These varied wildly, with one as low as 50,000 hectares and another of over 307 million hectares, the latter figure being based on the assumption that 20% of agricultural land is covered with trees. “There are limitations to our study,” continues Coe, “but it is a significant step in the right direction.”

Agroforestry is a feature of agriculture landscapes throughout the world, but the extent to which it is practised varies from region to region. It is particularly significant in Central America; less so in East Asia. There is a strong positive correlation between tree cover and humidity, but the relationship between tree cover and population density is less clear. This is presumably because other factors, such as markets, government policies, development programmes and local history, also influence the level of tree cover on farmland.

The study has several limitations. For example, tree cover estimates are based on computer analysis of remote sensing of one kilometre square pixels. Fifty per cent tree cover in a square kilometre could mean one large block of trees – in other words, a small forest – or an even scattering across farmland. And the analysis provides no information about the nature and use of trees on farmland.

“Before we conducted the study, the only figures available were guesstimates.”
Richard Coe

The global figures for tree cover are almost certainly conservative. There are large areas of agroforestry that are excluded from agricultural land, such as the jungle rubber systems in Indonesia and cocoa agroforestry in West Africa. In global land cover databases these areas are usually classified as forest, not as agricultural land.

Trees on Farm contains some important messages for politicians, climate-change negotiators, development specialists and others in a position to influence policy. It provides firm evidence that large areas of

agricultural land contain significant tree cover; it also suggests that certain areas – for example, along the fringes of the Sahara desert – could support many more trees on farms than they currently do.

“What is needed now is a series of much more detailed analyses that provide a better understanding of where people plant trees, why they keep them and how they use them,” says Coe. Recent research conducted by the World Agroforestry Centre in India (see box) and Indonesia is beginning to do precisely that.

Over **1 billion** hectares of agricultural land – almost half of the world’s farmland – have more than **10%** tree cover; **160 million** hectares have more than **50%** tree cover.

Focus on India

“If you know how many trees there are on agricultural land, that’s useful,” explains Pal Singh, the World Agroforestry Centre’s Regional Coordinator for South Asia. “But it’s much more useful if you know which species they are, and what they provide to farmers.”

A recent study conducted by Pal Singh and AN Singh provides the most thorough analysis to date of the extent of agroforestry in India. The scientists looked at satellite imagery analysis carried out by the Forest Survey of India for 120 selected districts and the Punjab state. Detailed analysis was conducted for Yamuna Nagar district in Haryana, and a number of villages in Lucknow district of Uttar Pradesh. The scientists used different methods of sampling on remotely sensed data to analyse the nature and extent of linear plantations, such as avenues along canals and roads, block plantations and scattered trees, at different levels.

Countrywide, the most important agroforestry tree was mango, followed by neem and coconut. Not surprisingly, there was considerable variation between states, with just 0.3% tree cover on farmland in Sikkim to 13% in the Lakshadweep. In Punjab, almost half the trees on farms are eucalypts and poplars. In Kerala, mango, coconut and other fruit trees predominate.

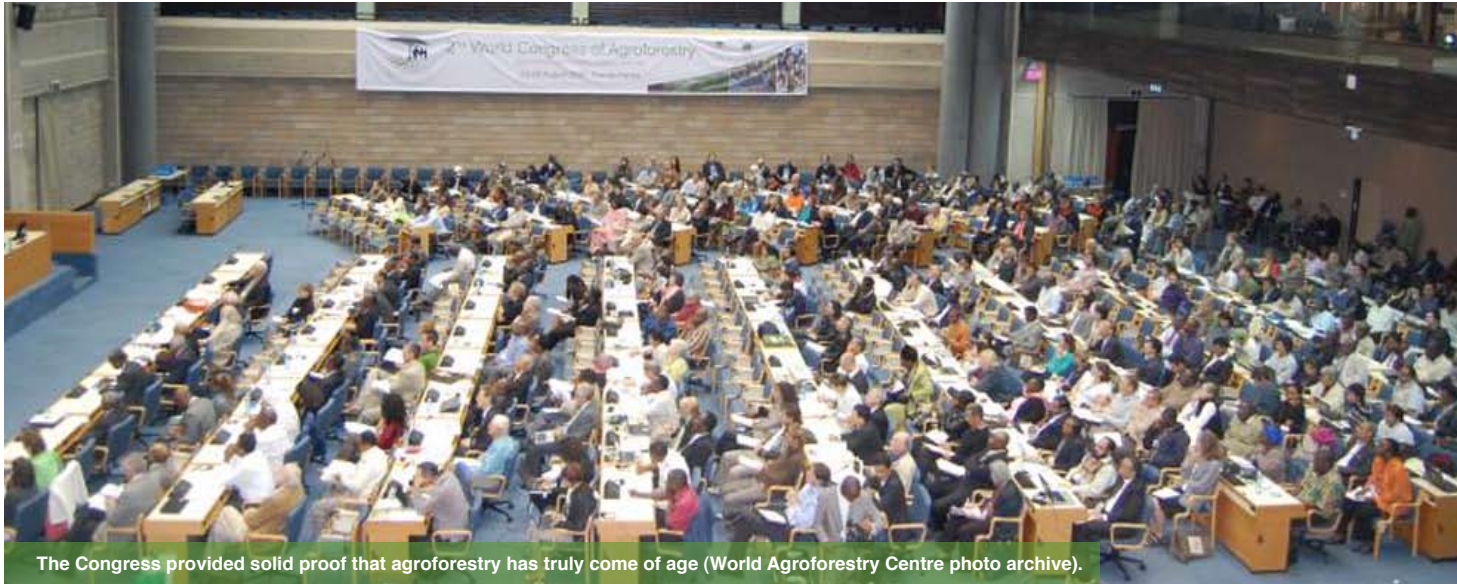
But does this have any implications for policy makers? “Studies like this will provide important information to central government and the states,” says Pal Singh, “and they will certainly be useful to the Greening India Programme.” Under this programme, central government has stipulated that all states must have 33% tree cover by the year 2020. This, it is hoped, will encourage carbon sequestration and restore degraded lands.

Some states will be able to achieve their targets by planting more trees on state-owned forest land, but for those lacking forest land, the increase will have to come from planting trees on agricultural land – in other words, through agroforestry.

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The Congress provided solid proof that agroforestry has truly come of age (World Agroforestry Centre photo archive).

ON THE WORLD STAGE

One of the clearest messages to come out of the 2nd World Congress of Agroforestry, held in Nairobi in August 2009, was that agroforestry has truly come of age. Over the last 30 years, it has been transformed from a vaguely defined concept to a robust, science-based discipline, and a land use which can address many of the world's most pressing problems.

Organized by the World Agroforestry Centre and the United Nations Environment Programme (UNEP), the Congress attracted close to 1200 participants from across the world, and was addressed by an impressive array of high-level speakers, including: Wangari Maathai, founder of Kenya's Green Belt Movement and Nobel prizewinner; Richard Leakey, the anthropologist and conservationist; MS Swaminathan, one of the fathers of the Green Revolution and now a champion of 'evergreen agriculture'; Namanga Ngongi, President of the Alliance for a Green Revolution in Africa (AGRA); and RK Pachauri, Chairman of the Intergovernmental Panel on Climate Change (IPCC). His Excellency Kalonzo

Musyoka, the Vice President of Kenya, delivered the host country address on behalf of President Mwai Kibaki.

In his opening speech, Dennis Garrity, the Director General of the World Agroforestry Centre, conceded that the congress theme – 'Agroforestry – the future of global land use' – might seem far-fetched to some people. But he pointed out we now have plenty of evidence to show that agroforestry can deliver a wide range of benefits. It can enhance food security and improve rural livelihoods; increase soil fertility; absorb atmospheric carbon, a major greenhouse gas; and provide farmers with the technologies to restore degraded land.

Close to **1200** people attended the 2009 World Congress of Agroforestry. "Agroforestry has now come of age as an integrative science and practice. It is at the heart of the solution to so many of the challenges we face."

Dennis Garrity

The number of trees in forests may be decreasing, but the number on farms is steadily increasing.

The three main sub-themes of the Congress were food security, the conservation and rehabilitation of natural resources, and policies to enhance agroforestry. These were addressed at plenary sessions and explored in greater depth at over 30 technical sessions, at which scientists were able to deliver presentations and discuss their latest research. Much of this research will be published in peer-reviewed journals.

Such was the strength of the case made for agroforestry, and for increasing its practice worldwide, that Achim Steiner, Executive Director of UNEP, was moved to remark: "There are so many reasons why agroforestry should be practised everywhere. When something is so obvious, why isn't it catching on like wildfire?"

One reason, highlighted by several speakers, relates to the failure of agroforesters to communicate their findings in a compelling and intelligible way to policy makers, politicians and the public. "Agroforestry has a public

relations problem, and we're often considered boring," suggested Roger Leakey of James Cook University, Australia. "It's time we learned how to talk more persuasively to communicators." Encouragingly, over 100 journalists attended a press briefing at the beginning of the Congress, and during the course of the week articles about agroforestry appeared in *Time* magazine, *New Scientist* and other international and national media.

The final day of the Congress was a time for reflection, with PK Nair chairing a symposium on the theme, 'The way forward - energizing the next wave of agroforestry science.' Meine van Noordwijk of the World Agroforestry Centre provided an overview of the highlights of the Congress, stressing the importance of linking science to policy. His colleague Frank Place provided insights into the discussions on the Agroforestry Policy Initiative, which the World Agroforestry Centre will be coordinating over the coming years. Finally, Dennis Garrity stressed the need to continue producing high-quality scientific research which has an impact on climate change decision-making, food security and much more.

"Don't use resources as if you're the last generation and there is no other generation after you!"

Wangari Maathai

"We must take the best of the indigenous, traditional and farmers' knowledge, forged over centuries of trial and error, and submit it to empirical, scientific and rigorous evaluation."

Achim Steiner

"The loss of every species and gene limits options for the future."

MS Swaminathan

Making headlines

Agroforestry stories have featured strongly in the media, with the Congress inspiring coverage that stretched from China to Canada, India to Iceland. Among the newspapers and magazines which ran stories related to agroforestry were the Daily Telegraph, Le Monde, the Shanghai Daily, the Jakarta Post and the Hindustan Times. Stories related to the Congress featured on over 50 online sites, including those of El Pais, New Scientist and Time. Particular attention was given to the Trees on Farm study and the potential of a native African tree, *Faidherbia albida*, to provide natural fertilizers to improve crop yields. (See pages 13 to 15)

Further reading

For Congress reports, summaries and presentations, visit the 2nd World Congress of Agroforestry website <http://www.worldagroforestry.org/wca2009/>



Agroforestry landscapes, such as this one in Senegal, can play an important role in the battle against global warming by sequestering and storing carbon (World Agroforestry Centre photo archive).

TACKLING CLIMATE CHANGE THROUGH AGROFORESTRY

During the year leading up to the United Nations Climate Change Conference in Copenhagen, in December 2009, research by the World Agroforestry Centre highlighted the role trees on farms could – and should – play in the battle against global warming. Our scientists also provided support for climate-change policy makers, especially in Africa and Indonesia, and are helping to develop new techniques to measure the quantities of carbon stored in agricultural landscapes.

At the 2007 Climate Change Conference, held in Bali, negotiators agreed that REDD – reducing emissions from deforestation and forest degradation – should be a key component of the agreement that will replace the Kyoto Protocol in 2012. Deforestation accounts for approximately 20% of greenhouse gas emissions and reducing the rate at which forests are cleared will cut emissions.

While fully supporting REDD, the Centre believes it needs to go further to consider agricultural landscapes beyond the forest boundaries. “During the past year, we have

tried to move the agenda beyond REDD,” explains Frank Place, Head of the World Agroforestry Centre’s Impact Office. “The key focus of REDD is tackling emissions by planting or protecting forests, but it fails to recognize the role farmers can play in sequestering carbon dioxide from the atmosphere.”

A whole landscape approach

The potential for extending REDD was highlighted by the World Agroforestry Centre when the 14th Conference of the Parties to the United Nations Framework Convention on

“During the past year, we have tried to move the agenda beyond REDD.”

Frank Place

Climate Change met in Poland in 2008. The Norwegian Government subsequently accepted World Agroforestry Centre scientist Meine van Noordwijk's proposal to develop the concept further. Instead of just reducing emissions from deforestation and degradation, he argues, we need to reduce emissions from all land uses – REALU, for short.

One of the difficulties with REDD relates to the definition of what is, and is not, forest, and this is largely determined by institutional arrangements rather than tree cover. Take, for example, Indonesia, the world's third largest emitter of greenhouse gases. According to van Noordwijk, you will find large areas of land classified as 'forest' without any trees, and large areas of 'non-forest' with significant tree cover. REDD would only apply to the land classified as 'forest', even though the 'non-forest' areas that actually have tree cover are highly significant when it comes to their greenhouse gas emissions, and could potentially play a major role in sequestering carbon.

At a rough estimate, REDD projects will only capture, at best, 60–70% of the emissions related to land-use change. "If we really want to reduce land-use emissions," says van Noordwijk, "we need to capture the other 30–40% as well, and much of that can be done by developing smallholder agroforestry on land which is not classified as forest land." In other words, we need REALU, which goes beyond REDD.

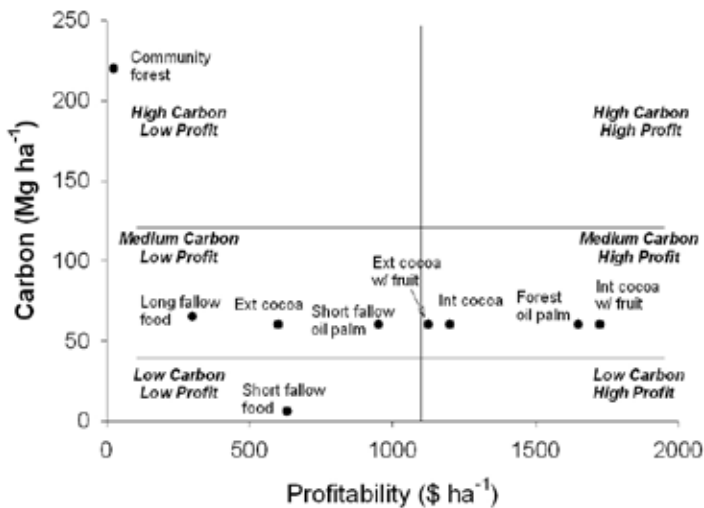
Most of the deforestation in Africa, and in many parts of Asia, is caused by agricultural expansion, largely by smallholder farmers. This means they can't be ignored in a future climate change agreement. "If millions of smallholders are denied access to the carbon market, then there'll be no incentive for them to change the way they behave," says Peter Minang, Global Coordinator of the ASB Partnership for the Tropical Forest Margins.

Drawing on over a decade of research on the complex relationship between forests and the adjacent landscapes, Minang and his colleagues believe that REDD is unlikely to achieve significant emission reductions unless it explicitly includes arrangements which encourage farmers to plant trees. "We should be encouraging carbon-rich agroforestry," says Minang. "It has the potential to increase farmers' income, sequester more carbon and benefit biodiversity." The ASB Policy Brief *REDD Strategies for High Carbon Rural Development* describes the benefits – both for climate mitigation and local livelihoods – of agroforestry.

"The biocarbon initiative has created an African voice, and that's very important when it comes to international negotiations."
Peter Minang

A new initiative for Africa

Research conducted by ASB found that in 80% of the areas investigated, the activities that caused a loss of carbon, such as converting forests to cropland, generated USD 5 or less in profits for every tonne of CO₂ equivalent released. This is considerably less than some



Agroforestry systems can store carbon and yield a good profit at the same time. (ASB Policy Brief 11)

of the current prices being paid for carbon, for example when traded under the EU's Emission Trading System. This means that relatively modest payments could deter farmers from clearing forests and at the same time encourage them to plant tree crops.

This could be particularly important in Africa. Between 1900 and 2005, more than 9% of Africa's forests were lost, at a rate of 4 million hectares a year. If this continues, greenhouse gas emissions from African agriculture could increase by more than 60% by 2030.

Preventing this, and helping African smallholders benefit from the carbon trade, is a key objective of the Africa Biocarbon Initiative, established by the Common Market for East and Southern Africa (COMESA). The World Agroforestry Centre is providing scientific evidence to support the initiative. "The initiative is helping African governments engage in climate-change issues in a way they never did before," explains Minang. "It has created an African voice, and that's very important when it comes to international negotiations."

During the past year, the World Agroforestry Centre convened 11 COMESA workshops, bringing together policy makers, scientists and other interested parties from the 19 member countries. Together, they developed a clear idea of what they wanted from the Copenhagen climate meeting: an agreement that takes decisive action to reduce emissions and increase carbon stocks not just on forest land, but on land used for other purposes as well.

Getting the sums right

One of the reasons why agricultural landscapes have been excluded from the EU's Emission

Trading System relates to the difficulties in measuring carbon stocks. "The argument is that it's possible to measure the amount of carbon in a large, uniform tree plantation in, say, Moldova," explains Jonathan Hasket, principal scientist at the World Agroforestry Centre, "but we don't know how to measure carbon stocks in a landscape where there is a mosaic of different land uses, and trees are scattered in blocks of different sizes and species."

This is all set to change. Scientists from the World Agroforestry Centre, the Center for International Forestry Research (CIFOR), Michigan State University and World Wildlife Fund (WWF) are developing a new system to measure, monitor and manage carbon in a diverse range of landscapes. The research is being carried out under the Carbon Benefits Project, funded by the Global Environment Facility (GEF) and the United Nations Environment Programme. The project includes research sites in Kenya, Niger, Nigeria and China.

GEF was particularly keen to fund the research as it will provide the sort of guidance it needs to calculate the carbon benefits of the development projects it funds. "Although we're still developing the system for measuring carbon in complex landscapes, GEF is interested in applying the system across a wide range of land use projects in its portfolio," says Hasket. "This project is putting an end to the idea that you can't measure carbon beyond large blocks of forests."

Combining remote sensing, infrared spectroscopy (see page 17) and rigorous statistical analysis, the research could remove one of the major barriers which prevents smallholder farmers engaging in the carbon market.

"This project is putting an end to the idea that you can't measure carbon beyond large blocks of forests."

Jonathan Hasket

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The domestication of high-value indigenous fruit trees like the African plum (*Dacryodes edulis*) is helping to raise farm incomes in Cameroon. (Charlie Pye-Smith)

FRUITS FOR A BETTER FUTURE

The World Agroforestry Centre is playing a leading role in the domestication of indigenous fruit trees, a process that has the potential to improve the welfare of millions of smallholder farmers. The research is already helping to increase incomes, improve nutrition and enhance biodiversity.

If you'd come here 10 years ago, says Thaddeus Salah, a smallholder in north-west Cameroon, you'd have seen real poverty. "In those times," he says, "we didn't have enough to eat." But it wasn't just food that his family lacked. They couldn't afford school fees, healthcare and many other things.

Thaddeus's fortunes began to change in 2000 when he learnt how to identify the best indigenous fruit trees in the wild, and the techniques to propagate them in a nursery. "Domesticating wild fruit trees has changed our lives," he says. He now earns five times more than he did in the past and he's been able to pay school fees and renovate his house.

Thaddeus is one of many farmers in West Africa who have benefited from the participatory domestication programmes launched by the World Agroforestry Centre in 1998. This ongoing programme involves communities in the selection, propagation and management of high-value indigenous fruit trees. In 1998, there were just two farmer-run nurseries. There are now several hundred. Many of these nurseries have been supported by a small network of 'rural resource centres'. Besides establishing nurseries and demonstration plots, the centres have provided training for thousands of farmers like Thaddeus in a range of agroforestry practices. (See story pages 21 to 23).

"If you come back to north-west Cameroon in 10 years' time, I hope you'll see improved varieties of indigenous fruit tree and medicinal plant on every smallholding."
Zac Tchoundjeu

Seeds of hope

Partnership – and farmers’ participation – has been at the heart of a programme to domesticate *Allanblackia*, an indigenous African tree whose seeds contain an oil with properties that make it highly attractive to companies manufacturing food spreads such as margarine.

The benefits of the emerging trade in *Allanblackia* oil, derived so far from harvesting in the wild, are already being felt by some 10,000 smallholder farmers. “With the money I’ve made,” explains Wallace Kimweri, a farmer in Tanzania’s East Usambara Mountains, “I’ve been able to buy things I could never afford before.” Last year he bought a cow for 160,000 shillings (USD 120). The profits from *Allanblackia* have also paid

for iron sheets to re-roof his house and his childrens’ school fees.

But there’s a problem: there aren’t nearly enough trees to satisfy demand. The solution lies in turning *Allanblackia* into a crop that can be planted on farmers’ fields, and its domestication is one of the key activities of the Novella Project, a public-private partnership involving the World Agroforestry Centre, Unilever, the World Conservation Union (IUCN) and the Netherlands Development Organisation (SNV).

“Within 10 years, we’re hoping African farmers will be growing 25 million *Allanblackia* trees,” explains Tony Simons, Deputy Director General of the World Agroforestry Centre. The project aims to double the income of those involved with *Allanblackia* cultivation by 2017.

In 1998, there were two farmers’ nurseries in Cameroon. There are now over **300**.

“Over **10,000** smallholder farmers in Africa are benefiting from the trade in *Allanblackia* oil. Before long, millions could be.”

The Science of Success

“As a general principle, it is important to maintain genetic variation in the trees farmers plant,” explains Ian Dawson, a Research Fellow with the World Agroforestry Centre. “With many species of fruit trees, for example, different ‘genotypes’ need to cross with each other if they are to produce fruit.”

Measuring fruit size, colour, taste and so on enables researchers and farmers to understand the variation in important traits, but these observations describe only a small portion of the underlying genetic diversity in trees. However, by using biotechnology, and particularly molecular markers, the genetic diversity of a species can be revealed in full.

Molecular markers provide detailed information about how genetic diversity is structured within and among different stands of trees. “They are like lamp posts on the genome,” explains World Agroforestry Centre scientist Ramni Jamnadas, “and if we use them wisely they can help us to safeguard useful genetic variation within species.”

Molecular markers could prove particularly useful for tree-crop domestication programmes. In Cameroon, for example, their use enables scientists to establish the degree of variation within the populations which are currently being cloned for planting in farmers’ fields.

“We need to do this to ensure that farmers plant a genetically diverse range of trees,” explains Zac Tchoundjeu, Regional Coordinator for West and Central Africa. “If we don’t, then inbreeding is likely to lead to lower productivity, and a lack of genetic variation could also make the trees more prone to diseases and other problems.”

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By planting nitrogen-fixing trees, farmers can significantly boost their crop yields—in certain situations. (Stevie Mann)

A GREEN SALVATION FOR POOR FARMERS?

We know that farmers can boost their crop yields by planting legumes that fix nitrogen in the soil, but a key question remains: which ‘green fertilizers’ work best, and under what conditions? An analysis conducted by the World Agroforestry Centre provides some answers.

In sub-Saharan Africa, cereal yields average about one tonne per hectare, and have barely risen in the past 30 years. In many countries, the situation is desperate. In Zambia, for example, 69% of smallholders can’t afford to buy mineral fertilizers, and around a third of the area planted with maize is abandoned each year. Declining soil fertility, coupled with the high price of mineral fertilizers, is largely to blame.

But there is a low-cost remedy, and increasing numbers of farmers are benefiting from it. By planting green fertilizers – leguminous plants which draw nitrogen from the air to produce compounds which enrich the soil – farmers can restore fertility and increase yields.

Take, for example, Nelson Mkwaila, who farms a small plot of land near Blantyre, Malawi.

“Ten years ago, I was lucky if I got one tonne of maize a hectare and I struggled to feed my family,” he recalls. “Now I get three times that much, thanks to these plants.” Mr Mkwaila is dwarfed not just by his maize, but by the *Gliricidia* bushes which grow between each row, acting as a fertilizer factory in his fields. Every year, before he sows his maize, he cuts back the *Gliricidia*; the leaves are incorporated into the soil and the woody stems provide fuel for the kitchen.

“If farmers are to benefit from these technologies, it’s important that we understand the conditions under which these plants work best.”
Gudeta Sileshi

Sifting the evidence

In Mr Mkwaila's case, the fertilizer trees undoubtedly work. However, there has been considerable debate during recent years about the precise impact of woody and herbaceous legumes on soil fertility. "There's been a lot of research on individual sites, but we needed to explain the variations in yield under different treatments," explains Gudeta Sileshi, an agroecologist with the World Agroforestry Centre and senior author of *Evidence for impact of green fertilizers on maize production in sub-Saharan Africa*. "If farmers are to benefit from these technologies, it's important that we understand the conditions under which these plants work best."

The meta-analysis conducted by Sileshi and his colleagues looked at the findings of 94 peer-reviewed studies. The

increase in maize yields using green fertilizers was compared with the increase using mineral fertilizer, and with the yields of maize cropped continuously without fertilizer. "In broad terms, the use of green fertilizers increases yields," explains Sileshi. The mean yield increase was highest at 2.3 tonnes per hectare for fully fertilized maize and ranged between 0.8 and 1.6 tonnes per hectare with green fertilizers.

The meta-analysis found that the type of soil affects the degree to which green fertilizers increase yields, with the response being highest on nutrient-poor soils, and lowest on nutrient-rich soils. This means that green fertilizers offer the greatest benefits on land with low to medium potential, which is typically worked by poor farming families.

Tree of Life?

Creating an Evergreen Agriculture in Africa describes two farming systems that are helping to restore exhausted soils and increase yields. One is maize agroforestry. The other is conservation agriculture with trees. This involves minimum tillage, crop rotation, retention of crop residues and the planting of *Faidherbia albida*, a nitrogen-fixing acacia tree.

Creating an Evergreen Agriculture suggests that these two systems, when combined with one another, could benefit millions of farmers.

Faidherbia has the remarkable habit of shedding its leaves during the rainy season and regrowing them during the dry season, which means that it does not compete with food crops for light, water or nutrients. Its chief virtue lies in its ability to make large quantities of nitrogen available to nearby crops, dramatically improving their performance during the growing season. Recent observations in Zambia found that unfertilized maize yields in the vicinity of *Faidherbia* trees averaged over 4 tonnes per hectare, compared to 1.3 tonnes beyond the tree canopy. In Niger, the tree is much favoured by farmers for its fertilizing qualities, and is now grown on almost 5 million hectares of crop land.

Nevertheless, we still have much to learn about *Faidherbia* and its suitability as a green fertilizer. We need to know more about its hydrological impact, and its influence on the water table. Are there certain situations where it would be imprudent to grow the tree? Could there be pests and diseases associated with *Faidherbia* which could threaten crop production? And what, exactly, is the potential to expand its use on African farms?

The vision of *Creating an Evergreen Agriculture in Africa* is attracting considerable interest, not just in Africa, but elsewhere. Festus Akinnifesi, the World Agroforestry Centre's Regional Coordinator for Southern Africa, spoke on the subject at a special side event at the United Nations General Assembly, held in New York in September 2009. The World Agroforestry Centre is supporting an initiative to promote conservation agriculture with trees across the African continent, launched by the New Partnership for Africa's Development (NEPAD).

The use of green fertilizers significantly reduces the level of risk for farmers. In areas with low and erratic rainfall, green fertilizers reduce the likelihood of crop failure, with woody legumes making scarce water resources available to the maize crop. In areas which experience high rainfall and are prone to water-logging, green fertilizers improve the soil's absorptive capacity and mop up some of the excess water.

“Our analysis suggests there are also important synergistic effects when mineral fertilizers and legumes are used together,” says Sileshi. Maize yields increase by 25-30% when farmers use half the recommended dose of mineral fertilizers in tandem with green fertilizers. However, adding further quantities of fertilizer does little to improve yields further.

“This is a really substantial piece of work,” says Fergus Sinclair, global project leader for the World Agroforestry Centre’s research on increasing farm productivity. “It shows that fertilizer trees can lead to significant increases in yields under the right conditions.”

The meta-analysis also opens up a new area of research. It is all very well showing that there is a mean increase in crop yields associated with the use of green fertilizers, but we now need to know what causes the variations around the mean. “Once we have the answers to that,” says Sinclair, “we will be able to refine the recommendations to farmers, and suggest which are the right legumes to use under which conditions.”



◀ Malawian farmer Nelson Mkwaila has improved his maize yields by planting fertilizer trees like Gliricidia. (Charlie Pye-Smith)

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Degraded soils mean hunger and misery. A better understanding of soil conditions will help farmers to improve their land (World Agroforestry Centre photo archive).

SOLVING AFRICA'S SOIL CRISIS

Over 230 million people in sub-Saharan Africa are chronically hungry. Soil degradation and meagre crop yields are partly to blame. Unfortunately, efforts to improve soils have been hampered by a serious lack of knowledge about soil conditions. A new project, launched in 2008, is tackling the problem.

The population of sub-Saharan Africa has more than doubled since 1970, and it may double again in the next 30 years. Land holdings have steadily shrunk in size and many farmers, unable to leave their land fallow, grow the same food crops, year after year, on the same plot of land. The vast majority cannot afford mineral fertilizers to replenish their soils and the result has been severe land degradation, declining yields and malnutrition.

The African Soil Information Service (AfSIS), funded by the Gates Foundation and the Alliance for a Green Revolution in Africa (AGRA), will revolutionize our understanding of Africa's soils. The World Agroforestry Centre, one of four

international research organizations involved in the project, is responsible for analysing and evaluating soil properties.

"For us, this is very exciting," explains the lead soil scientist, Keith Shepherd. "We are using soil surveillance principles which we helped to develop in West Africa and elsewhere, and infrared spectroscopy techniques which we've refined over the years in our laboratories in Nairobi." The Centre recently extended these techniques to include new x-ray and laser technology, maintaining the theme of only using light to rapidly analyse soils.

During the four-year project, tens of thousands of soil samples will be taken from at least 60 randomly selected sites, each

"Soil management must be dramatically improved if we are to reduce poverty, feed growing populations and cope with the impact of climate change on agriculture."
Nteranya Sanginga

measuring 100 square kilometres. The data will then be statistically modelled and combined with data from satellite images and other geographic databases, and a process of extrapolation will enable the scientists to create high-resolution maps that provide a picture of soil health across the whole of sub-Saharan Africa.

The maps will provide detailed information about the main constraints to crop productivity, such as a lack of phosphorus or a susceptibility to erosion. “We will also be able to make comparisons between undisturbed land and cultivated land, and come up with various indices of soil health,” explains Shepherd. The project will provide information about the impact of cultivation on soil carbon stocks, and the carbon storage potential of different soil types. This could be particularly useful

for countries negotiating deals which will reward them for sequestering or storing carbon as a measure to reduce the level of greenhouse gases in the atmosphere (see also pages 8 to 10).

During recent years, scientists working in Africa have developed a new approach to improving soil health, known as integrated soil fertility management, which combines the use of organic and inorganic fertilizers. However, a lack of information about soil health has proved a barrier to its adoption on a large scale. The information gathered by AfSIS will not only hasten its spread, but provide farmers, extension workers, agricultural ministers and others with information which will enable them to improve soil management, and in doing so tackle one of Africa’s most pressing problems: hunger.

About **500 million** hectares of sub-Saharan Africa’s agricultural land is moderately or severely degraded.

“Helping smallholder farmers increase their yields and incomes is one of the most important things the world can do to alleviate hunger and poverty.”

Rajiv Shah

Cheap, quick, accurate

Scientists at the World Agroforestry Centre are using infrared, x-ray and laser spectroscopic techniques to analyse soils. These are cheap, accurate and easy to use. The new instruments provide accurate information that greatly increases the likelihood of agricultural and development projects achieving their goals.

When used by research and development programmes, the surveillance approach eliminates the guesswork involved in matching improved agricultural technologies to specific soil types. Although the World Agroforestry Centre adapted the new analytical techniques to increase agricultural productivity, they can also be used to plan and monitor environmental programmes. For example, in East Africa infrared spectroscopy has been used to identify the source of pollution that threatens Lake Victoria.

“We are confident that within 10 years, soil laboratories in developing countries will be using the new spectroscopic techniques, and traditional methods using chemical extractions will become obsolete,” says Keith Shepherd.

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Helping farmers to develop their marketing skills can do much to improving incomes. Indigenous fruits on sale in a market in Cameroon. (Charlie Pye-Smith)

CRACKING THE MARKET CONUNDRUM

For many farmers, the biggest challenge lies not in growing crops, but in getting good returns. Limited knowledge about the market, inadequate processing facilities, poor roads and selling at the wrong time of year can all depress the prices farmers receive for their crops. But it needn't be like that, as a project in Cameroon has shown.

If you'd visited members of the Association pour le Développement Intégral des Exploitants Agricoles du Centre (ADEAC) five years ago, they'd have complained about the meagre prices they were getting for their 'njansang'. This had nothing to do with lack of demand for these aromatic kernels, harvested from the tree *Ricinodendron heudelotii*: most households in Cameroon use njansang to prepare soups and other dishes.

Today, you'll hear a very different story from the ADEAC farmers involved in njansang production. They are now getting an average 31% more for the kernels, and because they're harvesting more, they have seen an 80% increase in their revenues.

This change in fortunes can be largely attributed to an innovative marketing approach pioneered by the World Agroforestry Centre and its local partners. The Farmer Enterprise Development initiative, launched in 2003, helped smallholder farmers develop marketing skills, increase their on-farm production and improve their processing capacity. Over 400 njansang producers have benefited, along with some 250 farmers who harvest and trade kola nuts, which are popular stimulants in West Africa.

According to Charly Facheux, an economist with the World Agroforestry Centre, three distinct processes have enabled njansang and kola nut sellers to get higher prices. First, they have acted collectively to improve their bargaining power

Farmers are now getting **31%** more for their njansang kernels.

and gain a better understanding of the markets. Second, microfinance provided by the initiative during the first year meant that farmers were no longer forced to sell their crops when there was a glut and prices were low. By taking out small loans, they could meet their daily needs and wait until the market improved before selling their njansang and kola nuts.

Finally, the farmers benefited greatly from more efficient methods of processing. One of the problems with njansang is that the kernel is hard to crack, and it can take 10 women up to 25 days just to produce a 50kg bag. The introduction of a cracking machine, developed by engineer Moucha, working in collaboration with the Centre and with input from njansang farmers, has dramatically improved processing capacity. Now, it takes just two days to get a 50kg bag of njansang, and farmers from other parts of the region are coming to ADEAC to take advantage of the machine.

The stepwise approach pioneered by the Farmer Enterprise Development initiative is now being used for other agroforestry tree products elsewhere in the country. "With the right training, and access to microfinance and better processing facilities, farmers can dramatically increase their incomes from tree crops," says Facheux.

Better prices, better lives

In Cameroon, the World Agroforestry Centre is probably best known for its work on participatory tree domestication, which has encouraged farmers to plant superior varieties of indigenous fruit trees like njansang, bush mango and African plum on their fields. During the past three years, the number of farmers taking part in domestication programmes has grown dramatically, thanks largely to the Agricultural and Tree Product Program managed by the Centre.

The programme has also focused on improving the marketing of tree crops and medicinal plants in the west and northwest regions. Like the Farmer Enterprise Development initiative, it has shown what a dramatic difference efficient processing can make to rural communities. Take, for example, the experience of a women's self-help group in Bafut.

It used to take the women 72 hours to process raw cassava into 'garri', a popular food which looks like a finely ground breakfast cereal. Among other things, this involved the laborious use of a hand grater. "We had so many problems," recalls Magdalene Sirri, the group's secretary. "Some of us would get backache, and we frequently cut our hands with the grater. It also took so much time."

"With the right training, and access to microfinance and better processing facilities, farmers can dramatically increase their incomes from tree crops."

Charly Facheux



△ A cassava processing project has enabled these women in Bafut, Cameroon, to dramatically increase their incomes. (Charlie Pye-Smith)

In 2008, the income-generating activity officer with the Agricultural and Tree Products Program suggested to the women that they could increase their incomes, and save themselves a lot of effort, if they used a machine to process the cassava. They agreed, and the 35 members contributed 5000 CFA francs (USD 10) each towards the running of a processing machine that was donated by the project. Besides using it for their own cassava, the women are now operating as a business, processing cassava for farmers in the area. It now takes one day, not three, to make garri.

The machine has transformed the women's lives. "I make more money in a shorter period of time," says one woman, "and that means I can spend more time with my family." Another says she can now buy better clothes and household goods, without having to ask her husband for money. One of the younger members no longer depends on her parents for pocket money. "Before, my family used to eat very simply," adds Magdalene Sirri. "But now our diet is much better. I buy vegetables in abundance as well as beef and fish, something we could never afford in the past."

"Now our diet is much better. I buy vegetables in abundance as well as beef and fish, something we could never afford in the past." **Magdalene Sirri**

PROJET LAMIL
Landscape Management for Improved Livelihoods
ICRAF-CIFOR SNPRV-IRAG
USAID-DNEF-ACA

FORET CLASSEE de: SOUTI YANFOU
VILLAGE de: Takouba de Kolenté
COOPERATIVE de: Takouba de Kolenté
TABLEAU de SUIVI des PRIX des PRODUITS
Date: 15/13/09

Mazché	Nom du produit	Prix Kg. mini / unité	Prix Kg. maxi / unité
Kindia Centre	maïs	3000	4200
	Riz	3000	4000
	ARACHIDE	2800	3000
Talente Centre	maïs	4000	4400
	RIZ	4000	4400
	arachide	4000	4200
	maïs	3300	4000

△ A LAMIL notice tells farmers how much they will get for their produce—maize, rice, peanuts—in different markets on any given day. (Charlie Pye-Smith)

Information matters

The Landscape Management for Improved Livelihoods (LAMIL) project in Guinea, jointly managed by the World Agroforestry Centre and the Center for International Forestry Research (CIFOR), has had a profound influence on the management of four forest areas and at the same time improved the welfare of local people. Among other things, LAMIL helped farmers to gain a better understanding of the market by providing information about crop prices. Here, in a village near Kindia, farmers can see how much they will get for their maize, rice and peanuts on any given day at three different markets.

To read more about the LAMIL project, download the booklet:

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The nurseries of excellence (NOEL) project helped farmers in Tsunami-hit Aceh, Indonesia, to raise over half a million tree seedlings. (James M. Roshetko)

SCALING UP

Introducing agroforestry practices which improve lives in a village or a valley is one thing. Scaling them up so that they benefit tens of thousands of people, or even millions, across large landscapes and whole countries is quite another. Three very different agroforestry projects provide insights into how it can be done.

Cameroon's rural resource centres

Towards the end of the 1990s, the World Agroforestry Centre helped to train some 50 extension workers in Cameroon's Ministry of Agriculture and Rural Development in the techniques associated with the domestication of indigenous fruit trees (see page 11).

"The training went well," recalls Ebenezar Asaah, a tree scientist with the World Agroforestry Centre, "but the project ended in failure." This was because the vast majority of those trained moved within a short period of time to other ministries and departments where their new-found skills were of little or no use.

"So we came up with a new strategy," recalls Asaah. "We'd noticed that some farmers' groups were doing great things, and we decided to work with them to establish a new

way of providing training. That paved the way for the creation of a network of rural resource centres."

One of the best developed is Twanoh Mixed Farming Common Initiative Group (MIFACIG) in Cameroon's northwest region. Prior to the World Agroforestry Centre's arrival on the scene in 1998, MIFACIG operated a small tree nursery and provided training in beekeeping and one or two other activities to local farmers. Since then, it has been transformed into a major training and plant-production enterprise.

"Our main purpose is to transmit knowledge to the surrounding communities," explains Emmanuel Kuh, MIFACIG's coordinator. "We have trained over 2500 farmers in a range of different activities and we now have 35 satellite nurseries run by community groups."

"Our main purpose is to transmit knowledge to the surrounding communities."

Emmanuel Kuh

Training programmes cover beekeeping, pig husbandry, propagation of indigenous fruit trees, marketing and much more. There is simple accommodation for 30 visitors and a large training hall. Sales of planting materials now bring in an income of around 10 million CFA francs (USD 20,000). Profits are reinvested in the centre, and help to pay for the eight-strong workforce.

A decade ago, the vast majority of farmers in the area earned most of their income from the sale of coffee, a cash crop whose price has fluctuated wildly. Thanks largely to the training provided by MIFACIG and the World Agroforestry Centre, many are now planting other crops, such as improved varieties of African plum and cola. They are no longer at the mercy of the coffee market, and many have increased their income.

By early 2009, there were six rural resource centres in the west and northwest, with four more in the process of being created. During recent years, the centres have benefited from their association with the Agricultural and Tree Products Program funded by the United States Department of Agriculture and managed by the World Agroforestry Centre. An independent mid-term evaluation found that the programme was transforming the lives of some 8000 farmers and entrepreneurs. The rural resource centres have been central to the programme's success.

Farmers lead the way in East Africa

In August 2008, Sarah Kawere, a smallholder in the Ugandan village of Namulaba, was recruited as a voluntary 'farmer trainer' by Jane Kugonza,

a dissemination facilitator with the World Agroforestry Centre. In just two months, Sarah, a widow with four children, trained 20 local farmers how to grow better fodder crops and improve the nutrition of their dairy cattle. By using a high-quality feed on her own farm, she also increased her milk production by two litres per cow per day.

Mrs Kawere is one of some 300 farmer trainers who are playing a crucial role in disseminating information which is helping smallholder farmers to improve their milk yields. "This is one of the really innovative aspects of our work with the East Africa Dairy Development Project," explains World Agroforestry Centre scientist Steve Franzel. Funded by the Gates Foundation, and managed by Heifer international, the project aims to transform the lives of around 179,000 families in Kenya, Uganda and Rwanda by doubling their dairy incomes over the next 10 years.

Among the problems facing the region's smallholders are a lack of knowledge about efficient farming practices and weak market institutions. The decline in agriculture extension services in recent years is partly to blame, and the World Agroforestry Centre and its partners recognized that a new approach to disseminating information was needed.

When the project began, seven dissemination facilitators were recruited in the three countries. Their task is to train trainers such as Mrs Kawere. They provide them with information about suitable fodder and feeding strategies, and the trainees are then in a position to offer advice to other farmers. "The trainees are chosen by their peers, not on

179,000

families in Kenya, Uganda and Rwanda will benefit from this project.



Sarah Kawere (in pink) training other farmers how to grow better fodder crops. (Charlie Pye-Smith)



A community tree nursery. (James M. Roshetko)

the basis of their expertise, but on their ability to communicate with their fellow farmers,” explains Franzel. Around 40% of the farmer trainers are women.

A number of factors motivate the trainers. They learn about the best farming practices, and therefore increase their own chances of getting better milk yields and a better income. Trainers are provided with seeds and planting material they give free of charge to farmers in their group, but which they can sell to outsiders. And farmer trainers like Mrs Kawere have noticed that their role as teachers improves their social status.

Farmer trainers have been used before, but their impact has never been properly documented. The East Africa Dairy Development Project will not only improve the welfare of around a million people; it will shed new light on the best ways of disseminating research on a large scale.

Aceh's triumph over adversity

On 26 December 2004, Indonesia was struck by a Tsunami which killed some 200,000 people and displaced half a million. The worst-affected province was Aceh, which had already suffered from many years of armed conflict. The immediate impact on the environment was devastating. But the long-term implications were also troubling: displaced people swelled the local population of some areas, posing a serious threat to forests and farmland.

The Canadian International Development Agency responded by providing the funds for an agroforestry programme whose main aim was to establish ‘nurseries of excellence’ (NOEL). Managed by the World Agroforestry Centre and Winrock International, the two-year programme came to an end in April 2009. “It is a measure of the programme’s success that we achieved far

more than we set out to do,” says Team Leader and Tree and Market Specialist James Roshetko from Winrock International / World Agroforestry Centre.

Roshetko and his colleagues worked with local farmers’ groups, Islamic groups and non-governmental organizations to identify the species most favoured by farmers and provide training in nursery management, vegetative propagation and other techniques. The NOEL approach also involved collective action by communities to identify land rehabilitation objectives, and the setting up of work plans to achieve these.

By April 2009, 54 nurseries had been established. Of these, 24 were spontaneously established – they are known locally as *susalan* – by farmers’ groups which had observed the programme’s activities and seen the advantages of establishing their own nurseries.

Over 5200 individuals were directly trained by the NOEL programme, and just under 2500 benefited indirectly through informal training. During the programme, the nurseries raised over 550,000 seedlings – rubber, cocoa, durian, rambutan and mango being the most favoured species – with a commercial value of 6.4 billion Indonesian Rupiah (USD 660,000). Over 60 farmers trained by the programme are now providing training to other farmers.

As far as the availability of high quality germplasm is concerned, the situation is better than it was before the Tsunami. Throughout the years of conflict, most farmers got their seedlings in the neighbouring province of North Sumatra. Besides being expensive, these were of variable genetic quality. “Thanks to the NOEL programme, there’s now a network of nurseries producing excellent material at a price local people can afford,” says Roshetko.

550,000

seedlings raised by nurseries.

“We achieved far more than we set out to do.”

James M. Roshetko

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Vibrant partnerships lie at the heart of the Amazon Initiative. Partners in Peru collaborating on a research project. (Tito Marcos)

THE POWER OF PARTNERSHIP

Partnerships enable research institutions such as the World Agroforestry Centre to achieve much more than they ever would on their own. “With so much to do, and a relatively small number of scientists, the only way we can deliver our agenda is through partnerships,” explains August Temu, who runs the Centre’s Partnership Office in Nairobi. One of the most ambitious partnerships is guiding research activities in Latin America.

“We have invested five years of work helping to create the Amazon Initiative Consortium,” explains Roberto Porro, the World Agroforestry Centre’s Regional Representative for Latin America, “and this is now the framework under which we conduct all of our research.”

The Amazon Initiative, established in 2003, brings together six national agricultural research systems, four centres belonging to the Consultative Group on International

Agricultural Research (CGIAR), and a host of other research institutes, universities, non-government organizations and civil society groups.

In 2008, the CGIAR approved the Amazon Eco-Regional Programme, which is hosted by the International Center for Tropical Agriculture (CIAT) and includes a coordination unit in Belém, Brazil. This operates under the umbrella of the Amazon Initiative, and shares the

About **100** partnerships are covered by formal agreements

same research priorities: mitigation and adaptation to climate change; the adoption of sustainable land-use systems in deforested and degraded areas; enhancing benefits from forests for both livelihoods and the environment; and adding value to Amazonian forest products.

“Our main activities during 2008 and 2009 involved the creation of the Amazon Livelihoods and Environment Network,” explains Porro. The network is analysing how forestry, agroforestry and agricultural activities contribute to the well-being of over 100 Amazonian communities, as well as to environmental conservation.

A series of 12 regional workshops, whose purpose was to strengthen partnerships among organizations working in agroforestry, were convened by the World Agroforestry Centre and its partners under the banner of ‘Amazon Agroforestry Alliances.’ Researchers and practitioners were able to share experiences about different agroforestry initiatives and develop work plans for future collaborative research.

Around 85 scientists, most working for institutions that are members of the Amazon Initiative, contributed to a landmark study of agroforestry, edited by Roberto Porro. *Alternativa agroflorestal na Amazônia em transformação* – or ‘The

“With so much to do, the only way we can deliver our agenda is through partnerships.”

August Temu

Breaking into the carbon market

Partnerships come in many shapes and sizes. Many of the most important involve scientists from the World Agroforestry Centre working with scientists from universities, national agricultural research institutes and forestry research institutes. However, our scientists also work with civil society groups and local communities. This is precisely what has happened with many of the projects which focus on Rewarding the Upland Poor for Environmental Services (RUPES).

A project in the Philippines, involving scientists and members of the Kalahan indigenous community, provides a good insight into the sort of partnerships established under RUPES. The main aim of the Philippines project has been to help communities develop small-scale agroforestry projects which will enable them to participate in carbon markets. The thinking is simple: in return for growing trees which sequester carbon, local communities could receive payments from companies that wish to offset their carbon emissions.

“We have provided assistance to the Kalahan in a number of ways,” explains Rodel Lasco of the World Agroforestry Centre. “We have helped them to prepare the documentation required to gain access to the carbon market. We have linked them up with possible buyers of carbon, such as Mitsubishi. And we have provided guidance on how to measure carbon stocks.” At present, the Kalahan are exploring ways of selling carbon both under voluntary agreements, and through the Clean Development Mechanism of the Kyoto Protocol.

But is this development or research? Both, says Lasco. On one hand, the Centre has provided practical guidance to the Kalahan. But there has also been a strong element of research, which has involved documenting the barriers which face community groups who are trying to gain access to carbon markets.

“At present, communities face a mountain of paperwork and bureaucracy and the transaction costs are prohibitively high,” explains Lasco. Findings such as these, he says, should be taken into account when climate-change negotiators consider measures to Reduce Emissions from Deforestation and Degradation (REDD). See page 8.

agroforestry alternative for an Amazon in transformation’ – is a collection of peer-reviewed articles that illustrate current scientific knowledge about agroforestry and the opportunities and challenges for increasing agroforestry adoption in the region.

Another World Agroforestry Centre publication which was well received was ‘A guide to carbon measurement for smallholders.’ Aimed mainly at extension workers, the book provides practical guidance about how to measure carbon stocks and take advantage of the emerging carbon market.



Partnerships with other institutions provide an excellent opportunity to make agroforestry science work for development. (World Agroforestry photo archive/Charlie Pye-Smith)

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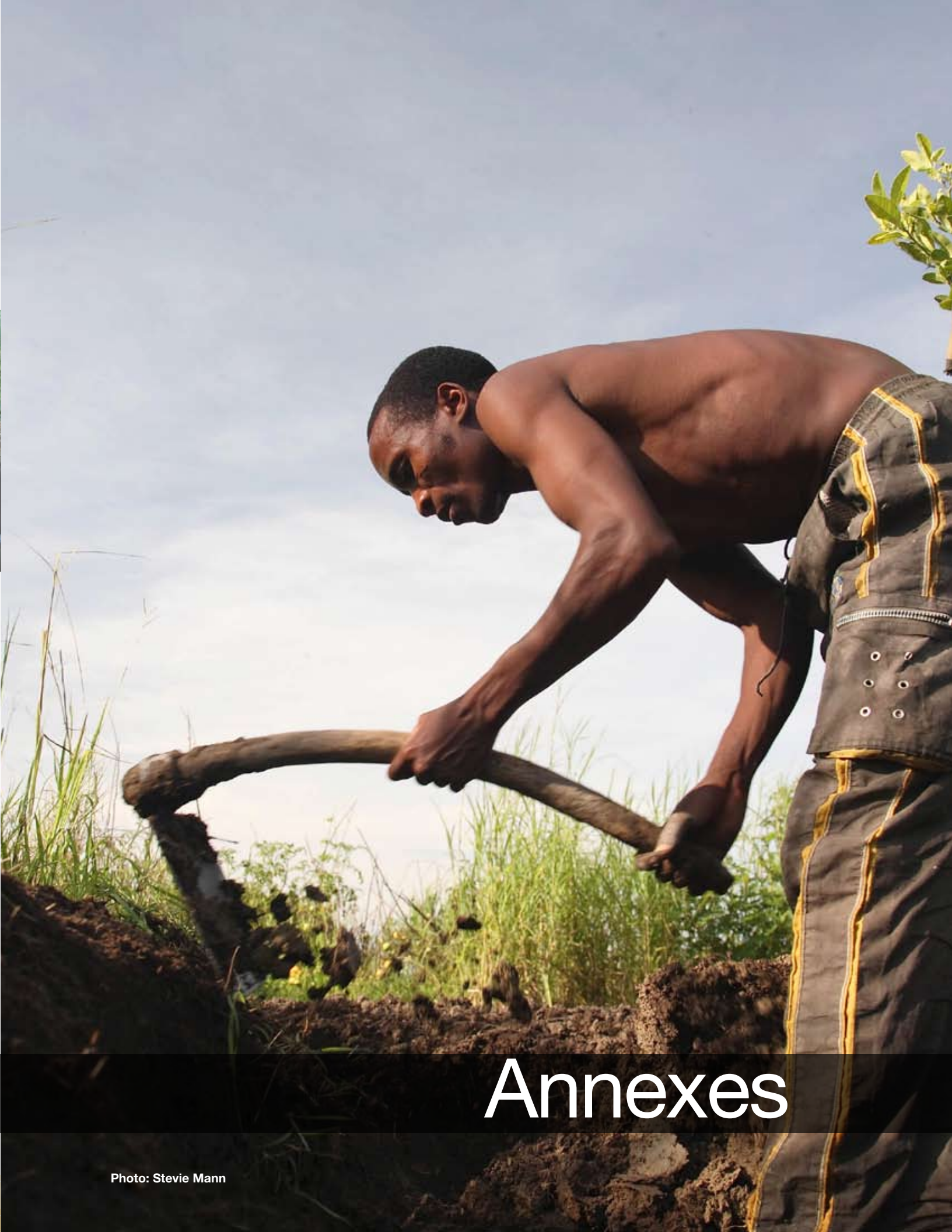
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Annexes

Photo: Stevie Mann

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Paco Sereme



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Eric Tollens



Linxiu Zhang

OFFICE OF THE DIRECTOR GENERAL

Dennis Garrity, Director General
Lillian Gatubu, Project Development Officer
Sheila Keino, Executive Assistant (*Left August 2008*)
Samuel Kiunga, Assistant Internal Auditor
Lucy Mbugua, Project Development officer (*Left September 2008*)
Priscilla Muisyo, Senior Administrative Assistant
Alison Ng'eny, Internal Auditor
Wahida Shah, Research Assistant

Consultants

Jean-Yves Maillat
Marjatta Selanniemi (*Left June 2009*)
Ed Sulzberger

Temporary Staff

Catherine Mwaniki

PARTNERSHIPS

August Basil Temu, Partnerships Coordinator
Rita Mulinge, Administrative Assistant

Consultant

Abednego Kiwia

OFFICE OF THE DIRECTOR OF FINANCE & OPERATIONS

Laksiri Abeysekera, Director of Finance and Operations
Beatrice Achuti, Assistant Accountant (*Left January 2009*)
Obedi Awero, Operations Contracts Officer
John Ayodi, Senior Office Attendant (*Left June 2009*)
Edwin Cheboi, MIS Officer
Catherine Gakenia, Accountant-Treasury (*Left November 2008*)

Ernest Gatoru, Budget and Corporate Finance Manager
Ruth Gicho-Kairu, Procurement Assistant – International
John Gitau, Senior Registry Clerk
Hannah Gitere, Accounts Clerk
Mahmouda Hamoud, Travel Manager
Sabra Idha, Assistant Travel & Conference Officer
Linus Kabutha, Finance Manager- Financial Information Systems
Gladys Kamau, Accountant Operations
Jennifer Kariithi, Administrative Assistant
Lillian Kemunto, Assistant Operations Officer (*Left June 2009*)
Jimmy Kiiro, Operations Manager
Francis Kinyanjui, Finance Manager - Operations
Abel Mageto, Storekeeper
Samuel Maina, Audio/Visual Technician (*Left June 2009*)
Evelyn Matara, Accountant
Anthony Mathenge, Accountant
George Mbiriri, Protocol Officer
Jane Moraa, Senior Secretary (*Left May 2009*)
Nzioka Muoki, Finance Manager – Treasury (*Left August 2008*)
Cecilia Mutinda, Front Office Assistant (*Left September 2008*)
Happiness Mwali, Front Office Assistant
Daniel Mwangangi, Procurement Assistant - Local
Lucy Mwangi, Senior Administrative Assistant
Betsy Ngugi, Assistant Accountant
Jacqueline Nyaboga, Accountant-Payroll
James Nyakundi, Assistant Accountant
Stephen Obondo, Technician
Joanes Okumu, Security Officer
Charles Otieno, Technician
Pauline Ouko, Accountant
Rose Thuo, Senior Administrative Secretary (*Deceased September 2008*)

Consultants

Anthony Mwangi
Anne Omamo

Temporary

Victoria Gatei (*Left March 2009*)
Collins Likimani (*Left December 2008*)
Fancy Machogu
Joyce Mihura
Ambrose Muthama (*Left October 2008*)
Alice Mwangi (*Left May 2009*)
Wonder Mwashe (*Left March 2009*)
Evanson Mutua
Agnes Nderitu

OFFICE OF THE DIRECTOR OF COMMUNICATIONS

Michael Hailu, Director of Communications
Sam Asura, ICT Database Specialist
Jan Beniast, Head of the Training Unit
Harrison Gatumu, ICT Network Specialist
James Indimuli, ICT Infrastructure Manager
Rebecca Jaffery-Selvarajah, Information Officer
Rosemary Kande, ICT Customer Services Manager
Naomi Kanyugo, Administrator
Sarah Katuu, ICT Helpdesk and Support Technician (*Left January 2009*)
Humphrey Keah, Information Specialist
Jacinta Kimwaki, Head Librarian
Juma Lumumba, ICT Customer Services Manager (*Left February 2009*)
Caroline Mbogo, Administrative Assistant
Ian Moore, ICT Manager
Solomon Mwangi, Webmaster/Web Developer
Carol Mwangi, ICT Customer Services Technician
Patrick Njuguna, Web Coordinator (*Left July 2008*)
George Obanyi, Publications Officer (*Left September 2008*)
Hellen Ochieng, Training Officer
Joshua Shivo, ICT Applications Manager
Zeba Siaanoi, Communications Officer
Reagan Sirengo, Graphic Designer
Tom Vandenbosch, Coordinator, Farmers of the Future
Hilary Wanyiri, ICT Helpdesk and Support Technician

Consultants

Delicia R.P.Garay
Kate Langford
Samuel Kairu (*Left December 2008*)
Clare Kemp
James Kahuri Njuguna (*Left July 2008*)
Anne Nyamu
Charlie Pye-Smith
Wendy Stone
Kris Vanhoutte

Temporary

Emma Akinyi
Michael Mwaniki
Anne Theuri (*Left December 2008*)
Iddah Wandolo

OFFICE OF THE DEPUTY DIRECTOR GENERAL

Anthony Simons, Deputy Director General
Kamini Balram, Head of Human Resources
Richard Coe, Principal Scientist - Head Research Support Unit
Beatrix Gacho, HR Specialist
David Karari, Senior Administrative Assistant (*Left November 2008*)
Elizabeth Kariuki, Head of Contracts and Grants
Stella Muasya, Programmes and Administrative Manager
Anne Munene, Contracts & Grants Assistant
Peter Muraya, Data Management Specialist
George Mutyauvyu, Human Resources Coordinator (*Left February 2009*)
Nancy Ntinu, Human Resources Manager (*Left February 2009*)
Meshack Nyabenge, GIS Unit Manager
Carolyn Odongo-Handa, HR Assistant
Idah Ogoso, HR Specialist
Frank Place, Impact Assessment Advisor
Alan Rodgers, Program Efficiency Advisor (*Deceased, March 2009*)
Faith Wambua, HR Assistant
Esther Wamoto, HR Assistant
Jane Wanjara, GIS Technician

Consultants

Salome Gitoho
Susanna Makela
Charles Masson
Lucy Muchoki (*Left August 2008*)
Aaron Pesa (*Left October 2008*)
Adrian Radcliffe
Patrick Shields (*Left September 2008*)
Judith Sinja

Temporary

Veronica Bosibori
Naomi Mabwa

GLOBAL RESEARCH PROJECTS**GLOBAL RESEARCH PROJECT 1**

Ramni Harmanjeet Jamnadass, GRP Leader - Tree Genetic Resources
Sammy Carsan, Scientific Assistant
Katja Kehlenbeck, Post Doctoral Fellow
Roeland Kindt, Ecologist
Sallyannie Muhoro, Administrative Assistant
Moses Munjuga, ICT Specialist
Cristel Munster, Post Doctoral Fellow
Jonathan Muriuki, Scientific Assistant
Nelly Mutio, Administrative Assistant
Alexious Nzisa, Database Clerk
Caleb Orwa, Database Assistant

Consultants

Joseph Cobbinah (*left December 2008*)
Ian Dawson
Najma Dharani (*left September 2008*)
Rodger Leakey
Eliot Masters
Anne Mbora
Alice Muchugi

Lucy Mwaura
Dennis Oloo
Van Breugel Paulo

Temporary

Martin Etale
Valentine Gitonga
Grace Kamanu
Julius Kimani
Susan Kimani
Joseph Kirimi
Fredrick Maingi
Jediel Maingi
Alexander Munyi
Daniel Ofori
Kennedy Olale
Theresa Peprah
Ibrahim Wafula
Agnes Were

GLOBAL RESEARCH PROJECT 2

Antoine Kalinganire, Representative Sahel Node & Co-Leader
GRP2, Bamako, Mali
Fergus Sinclair, Co-Leader GRP2

Temporary Staff

Anne Omollo

GLOBAL RESEARCH PROJECT 3

Steven Franzel, Global Research Project Leader - Markets and
Value Chains for Tree Products
Esther Karanja, Dissemination Facilitator
Josina Kimotho, Administrative Assistant
Josephine Kirui, Senior Dissemination Facilitator
Jane Kugonza, Technician, Kampala, Uganda
Dagmar Mithoefer, Marketing Specialist
Patrick Mudavadi, Dissemination Facilitator
Ronald Wabwire, Dissemination Facilitator, Kampala, Uganda
Sylvia Wafula, Dissemination Facilitator

Consultant

Mika Bennett

Temporary Staff

David Kimeto (*Left May 2009*)
Moses Ndathe

GLOBAL RESEARCH PROJECT 4

Keith Shepherd, Global Research Project Leader - Land
Rehabilitation
Dickens Alubaka, Senior Laboratory Assistant
Robin Chacha, Laboratory Attendant
Samuel Gaturu, Global Project Assistant
Thomas Gumbricht, Senior Scientist
Valentine Karari, Technician
Mercy Kamau, Senior Laboratory Technician
Peter Kisali, Laboratory Attendant
Josphine Muteti, Assistant Laboratory Attendant

Jane Ndirangu, Laboratory Attendant
Gard Okello, Laboratory Attendant
Andrew Sila, Data Analyst
Thomas Terhoeven-Urselmans, Post-Doctoral Fellow
Tor Vagen, Soil Scientist
Elvis Weullow, Senior Lab Technician

Consultant

Erick Towett

Temporary Staff

Beatrice Gathoni
Dominic Gisiora
Bella Kauma
Charles Kigwe
Jonathan Kimanzi
Cyprus Mulwa (*Left December 2008*)
Sylvester Munyao
George Musau (*Left December 2008*)
Emily Ndeleko
Beatrice Oware

GLOBAL RESEARCH PROJECT 5

Heinrich Neufeldt, Leader, Climate Change
Louis Vincent Verchot, Leader - Global Research Project Leader 5
(*Left July 2008*)
Edith Anyango, Laboratory Attendant
Pamela Obita, Administrative Assistant
Margaret Thiongo, Laboratory Technician

Consultants

Laure Dutaur (*left October 2008*)
Japhet Kashaigli

Temporary Staff

Paul Mutuo

GLOBAL RESEARCH PROJECT 6

Brent Swallow, Global Research Project Leader - Environmental
Policies and Provisioning
Peter Minang Akong, Programme Associate/Ag. Global ASB
Coordinator
Joyce Kasyoki, Project Manager
Catherine Kimengu, Administrative Assistant
Miika Makela, Associate Expert
Salla Elina Rantala, Associate Expert
Thomas T.B. Yatich, Research Analyst & PRESA Associate Officer

Consultants

Byamukama Biryahwaho - NAHI (*Left April 2009*)
Susan Chomba
Willy Makundi
Vanessa Meadu
Pauline Nantongo - ECOTRUST (*Left April 2009*)
John Mwangi (JKUAT)
Faith Wanjau
Sandra Velarde

REGIONS

EAST AFRICA

Jeremias Gasper Mowo, Regional Representative - East Africa & AHI Coordinator
 Henning Baur, Regional Coordinator-East Africa (*Left March 2009*)
 Walter Adongo, Driver/Field Attendant
 Aster Afwork, Post-Doctoral Fellow
 Aithal Anand, Associate Enterprise and Entrepreneurship in Agroforestry
 Luka Anjeho, Senior Field Technician
 Jean-Marc Boffa, Tree Domestication and Biodiversity Scientist (*Left August 2008*)
 Reginald Cherogony, Agricultural Engineer & Field Coordinator
 Johannes Dietz, Landscape Ecologist
 Zeleke Gete, Research Fellow- Rural Urban Linkage Program, Addis Ababa, Ethiopia (*Left May 2009*)
 Jonathan Haskett, Principal Scientist, Maryland, USA
 Miyuki Iiyama, Post-Doctoral Fellow
 David Kagoro, Liaison Officer/Dissemination Facilitator, Kigali, Rwanda
 Daniel Kaloki, Assistant Accountant (*Left June 2009*)
 Rick Kamugisha, Community Facilitator, Kabale, Uganda
 Edidah Kanyunya, Office Assistant, Kampala, Uganda (*Left April 2009*)
 Isaac Learamo, Technician
 Maimbo Malesu, Programme Coordinator-Water Management
 Joash Mango, Technician
 Kenneth Masuki, Knowledge Management Specialist, Kampala, Uganda
 Patrick Mbataru, Communications Officer
 Jephine Mogoi, Research Assistant
 Claire Momoh, Programme Administrator (*Left June 2009*)
 Noreen Nabwami, Administration & Finance Officer, Kampala, Uganda
 Martin Ngendo, Project Field Officer, Gisenye Area, Rwanda
 Frederic Nsengiyunva, Outreach Officer, Gisenye Area, Rwanda
 Douglas Nyolei, GIS Analyst
 Benjamin Nzigamasabo, Dissemination Facilitator, Nyagatare, Rwanda
 Thomas Ochinga, Field Attendant
 Donald Odhiambo, Driver
 Nashon Odiény, Office Assistant/Caretaker/Gardener
 Alex Oduor, Programme Officer- Information
 Peter Okoth, Driver
 Fabrice Pinard, Coffee AF Systems Specialist
 Charles Ssonko, Project Driver, Kampala, Uganda (*Left April 2009*)
 Joseph Tanui, Associate Scientist, Kampala, Uganda
 Joy Tukahirwa, NRM Specialist, Kampala, Uganda
 Grace Uwimana, Assistant Accountant, Kigali, Rwanda
 Elidad Uwiringiyimana, Field Assistant, Gisenye Area, Rwanda
 Susan Yapan, Administrative Assistant

Consultants

Georges Aertssen
 Henry Biwott
 Rosemary Kaggwa-Mindu
 Edidah Kanyunya
 Kindu Makonnen (*left August 2008*)
 Florence Muchori (*left August 2008*)
 Elphas Okonda

WEST AND CENTRAL AFRICA

Zacharie Tchoundjeu, Regional Coordinator/Co-Leader GRP1, Yaounde, Cameroon
 Harold Roy-Macauley, Regional Coordinator WCA, Bamako, Mali (*Left May 2009*)
 Paul Anegbah, Tree Domestication Researcher, Onne, Nigeria (*Left August 2008*)
 Ebenezar Asaah, Associate Scientist/Project Manager, Bamenda, Cameroon
 Julius Atia, Communication & Information Officer, Yaounde, Cameroon
 Gaspard Baba, Field Attendant, Bamenda, Cameroon
 Innocent Bekolo, Junior Scientist/Income Generating Activities Officer, Yaounde, Cameroon
 Alfred Betsi, Driver/Mechanic, Yaounde, Cameroon
 Edouard Bola, Technician, Bas Congo, DRC
 Louis Chin, Field Assistant, Bamenda, Cameroon
 Ann Degrande, Associate Scientist/Project Manager, Yaounde, Cameroon
 Mamadou Dia, Driver/Field Attendant, Samanko, Mali (*Left August 2008*)
 Fada Diall, Regional Finance and Administrator, Bamako, Mali
 Rokia Diallo, Administrative Secretary, Bamako, Mali
 Modibo Doumbia, Nursery Attendant, Bamako, Mali
 Gustave Ebengue, Field Attendant, Yaounde, Cameroon
 Cosmas Ekane, Financial Officer/Senior Operational Administration Officer, Yaounde, Cameroon
 Hilda Enjie, Office Attendant, Yaounde, Cameroon
 Charly Facheux, Associate Scientist/Project Manager, Yaounde, Cameroon
 Mbene Faye, Agro-Economist IFAD, Bamako, Mali (*Left April 2009*)
 Ibrahim Gatta, HR Administrator – Chief of Personnel, Samanko, Mali (*Left March 2009*)
 Boubacar Guindo, Administrative Clerk, Bamako, Mali (*Left March 2009*)
 Lyliane Kani, Office Assistant, Yaounde, Cameroon
 Brehima Kone, Scientific Officer, Samanko, Mali (*Left September 2008*)
 James Kongnyui, Junior Scientist/Capacity Building Officer, Yaounde, Cameroon
 Antoine Kuma, Technician, Basankusu/Djolu, DRC
 Jean Kwembe, Driver/Mechanic, Kinshasa, DRC
 Maurice Lenou, Driver/Mechanics, Bamenda, Cameroon
 John Mafolo, Junior Scientist, Kinshasa, DRC
 Philomene Mafomekiet, Junior Scientist/On farm Research Asst, Yaounde, Cameroon
 Athanase Makaya, Junior Scientist, Kinshasa, DRC
 Andre Mbatchou, Office Attendant, Yaounde, Cameroon
 Peter Mbile, Associate Scientist/Project Manager, Yaounde, Cameroon
 Amadou Mbouombouo, Field Assistant, Yaounde, Cameroon
 Appolinaire Meyene, National Coordinator, Kinshasa, DRC
 Bayo Mounkoro, Senior Research Technician, Segou, Mali (*Left October 2008*)
 Modeste Ndzana, Field Attendant, Yaounde, Cameroon
 Andrew Nebaso, Driver/Mechanic, Yaounde, Cameroon
 Crose Ngondjou, Account Assistant/Office Assistant, Yaounde, Cameroon
 Landry Njike, Driver/Mechanic, Yaounde, Cameroon
 Jacqueline Nkeng, Office Attendant, Yaounde, Cameroon
 Francis Numfor, Office Assistant/Project Admin Assistant, Yaounde,

Cameroon

Justin Omengle, Field Attendant, Yaounde, Cameroon
 Ibrahima Sangare, Driver/Observator, Segou, Mali (*Left August 2008*)
 Festus Shu, Driver/Mechanic, Bamenda, Cameroon
 Carmen Sotelo, Post-Doctoral Fellow, Bamako, Mali
 Edith Souop, Human Resources & Administration Officer, Yaounde, Cameroon
 Honore Tabuna, Associate Scientist, Yaounde, Cameroon
 Olutosine Tada, Office Attendant, Yaounde, Cameroon
 Anselme Takoutsing, Junior Scientist/Agricultural Production Officer, Yaounde, Cameroon
 Landry Tankam, IT Technician/Office Assistant, Yaounde, Cameroon
 Tchouala, Operational Admin Officer/Project Account & Administrative Officer, Yaounde, Cameroon
 Ibrahim Toure', ICT Specialist/Consultant, Bamako, Mali (*Left December 2008*)
 Therese Tshiana, Office Assistant, Kinshasa, DRC
 Alain Tsoheng, Junior Scientist/Farmer Group Facilitator, Yaounde, Cameroon
 Jean Vuavu, Technician, Bas Congo, DRC

Consultants

Serge Ngendakumana
 John Weber

SOUTH ASIA

Virendra Pal Singh, Regional Representative for South Asia, New Delhi, India
 Tara Dhoundiyal, Office Assistant, Delhi, India (*Left August 2008*)
 Giashuddin Miah, Country Liaison Scientist for Bangladesh, Dhaka, Bangladesh
 Devashree Nayak, Research Associate, New Delhi, India
 Jamal Noor, Regional Finance & Administrative Officer, New Delhi, India
 Lungten Norbu, Honorary Liaison for Bhutan, Thimpu, Bhutan
 DKNG Pushpakumara, Country Liaison Scientist for Sri Lanka, Colombo, Sri Lanka
 Vinod Singh, Driver, New Delhi, India
 Jeevika Weerahewa, Post Doctoral Fellow, Colombo, Sri Lanka

LA

Roberto Porro, Regional Coordinator, Belem, Brazil
 Kristina Arevalo, Traditional Knowledge Specialist, Lima, Peru
 Silvia Elera, Accounts/Office Assistant, Lima, Peru
 Juliane Frazao, Administrative Assistant, Belem, Brazil
 Leoncio Guerra, National Coordinator, Lima, Peru
 Marjorie Lima, Administrative Assistant, Pucallpa, Peru
 Abel López, Agroforestry Specialist, Pucallpa, Peru
 Roger Ramirez, Tree Domestication Technician, Pucallpa, Peru

Consultants

Jamie Cotta
 Maren Hohnwald
 Florencia Pulhin
 Marcos Tito

SOUTHERN AFRICA

Festus Akinnifesi, Regional Coordinator, Lilongwe, Malawi
 Oluyede Ajayi, Regional Agricultural Economist, Lilongwe, Malawi

Tracy Beedy, Post Doctoral Fellow, Lilongwe, Malawi
 Ester Bhebhe, Research Assistant, Harare, Zimbabwe
 Sebastian Chakeredza, Fodder Agronomist, Lilongwe, Malawi (*left March 2009*)
 Onward Chirmuzhengeri, Driver, Harare, Zimbabwe
 Conrad Chiwawa, Field Assistant, Harare, Zimbabwe
 Maxwell Doba, Field Assistant, Harare, Zimbabwe
 Lorraine Ennet Itaye, Administrative Secretary, Lilongwe, Malawi
 Fannie Gondwe, Regional Finance and Administration Officer, Lilongwe, Malawi
 France Gondwe, Scaling-Up Officer, Lilongwe, Malawi
 Mariam Haule, Administrative Assistant, Dar es Salaam, Tanzania
 Christopher Katema, Scaling-up Assistant, Lilongwe, Malawi
 Aichi Kitanyi, Country Representative, Dar es Salaam, Tanzania
 Henry Kwavale, AFSP Program Manager, Lilongwe, Malawi
 Livai Matarirano, Country Liaison Officer, Harare, Zimbabwe
 Arnela Mause, Country Liaison Officer, Maputo, Mozambique
 Maxwell Mtungama, Driver, Harare, Malawi
 Konisaga Mwafongo, Field Assistant, Lilongwe, Malawi
 Monica Nyakuwa, Administrative Assistant, Harare, Zimbabwe (*left April 2009*)
 Frank Tembo, Program Accountant, Lilongwe, Malawi
 Edward Thomas, Monitoring & Evaluations Officer, Lilongwe, Malawi
 Sileshi Weldesemayat, Scientist-Agroecologist, Lilongwe, Malawi
 Clever Zinaka, Finance and Admin Officer, Harare, Zimbabwe

Consultants

Simon Mng'omba
 Isaac Nyoka

SEA

Ujjwal Pradhan, Regional Coordinator, Bogor, Indonesia
 Ratna Akiefnawati, Field Manager & Associate Research Officer, Bogor, Indonesia
 Adrian Albano, Researcher, Los Banos, Philippines
 Voni Ardiani, Accountant, Bogor, Indonesia
 Sad Ardiharti, Regional Accountant, Bogor, Indonesia
 Rahmanulloh Arif, Research Assistant In Socio Economics, Bogor, Indonesia
 Josef Arinto, DTP Assistant, Bogor, Indonesia
 Armansyah, Office Service Assistant, Bogor, Indonesia
 Degi Asmara, Computer Modeller, Muara Bungo (Jambi), Indonesia
 Toni Asmawan, Landscape Hydrologist, Bogor, Indonesia
 R. Yana Buana, Socio Economic Research Assistant, Bogor, Indonesia
 Suseno Budidarsono, Agricultural Economist, Bogor, Indonesia
 Rosemarie Caballero, Accountant, Los Banos, Philippines
 Nurka Cahyaningsih, Finance Service Leader, Lampung Sumberjaya, Indonesia (*Left March 2009*)
 Delia Catacutan, Mindanao Programme Coordinator, Los Banos, Philippines
 Natjan Channuan, Senior Secretary, Chiang Mai, Thailand
 Dong Chen, Program Assistant, Beijing, China (*Left March 2009*)
 Huafang Chen, GIS-Technician, Kunming, China
 Geramil Cordero, Researcher, Bohol, Philippines
 Rafaela Delfino, Research Assistant, Los Banos, Philippines
 Caroline Duque, NRM Research Assistant, Lantapan, Philippines
 Nanda Dwanasuci, Program Assistant SEANAFE, Bogor, Indonesia
 Iron Edi, Research Assistant for RUPES Project, Bogor, Indonesia
 Don Edralin, Science Research Assistant, Los Banos, Philippines
 Aniq Fadhillah, Nursery Specialist, Bogor, Indonesia (*Left February 2009*)

- Anul Fauzi, Program Assistant Rupes, Bogor, Indonesia
 Jesus Fernandez, Capacity Building Specialist, Bogor, Indonesia
 Hernane Franje, Field Assistant and Driver, Claveria, Philippines
 Gamma Galudra, Social Forestry Specialist, Bogor, Indonesia
 Jun He, Project Manager, Kunming, China
 Haris Hidayat, Accountant, Aceh, Indonesia (*Left January 2009*)
 Minh Ha Hoang, Country Representative, Hanoi, Vietnam
 Xinping Hu, Project Assistant, Kunming, China (*Left August 2008*)
 Nazar Idris, Deputy Team Leader, Aceh, Indonesia (*Left January 2009*)
 Rika Irawati, Program Assistant – SEANAFE, Bogor, Indonesia (*Left September 2008*)
 Vinny Iskandar, Administrative Officer, Bogor, Indonesia
 Kurniawan Iwan, Marketing Specialist, Bogor, Indonesia
 Janudianto Janudianto, Research Technician, Bogor, Indonesia
 Feri Johana, Field Offices Meulaboh, Aceh, Indonesia
 Anantika Jongpajitsakul, GIS Research Assistant, Chiang Mai, Thailand
 Laxman Joshi, Ethno-Ecologist, Bogor, Indonesia
 Pramualpis Kanthatham, Country Administrative Officer, Chiang Mai, Thailand (*Left December 2008*)
 Ni'matul Khasanah, Research Assistant-Agroforestry Modelling, Bogor, Indonesia
 Noviana Khususiyah, Research Assistant, Bogor, Indonesia
 Rodel Lasco, Philippines Program Coordinator, Los Banos, Philippines
 Beria Leimona, Environmental Economist, Bogor, Indonesia
 Zhengli Li, Project Assistant, Kunming, China
 Dahlia Lia, Functional Unit Assistant, Bogor, Indonesia
 Xue Liang, Administrative Assistant, Beijing, China
 Qing Liu, Project Manager, Beijing, China
 Wenjun Liu, GIS Assistant, Kunming, China
 Flordeliza Lopez, Accounts Assistant, Los Banos, Philippines
 Raquel Lopez, Post-Doctoral Fellow, Los Banos, Philippines
 Anna Luntungan, Accountant, Bogor, Indonesia
 Mahyuddin Mahyuddin, Nursery Specialist, Aceh, Indonesia (*Left January 2009*)
 Endri Martini, Biodiversity Researcher, Bogor, Indonesia
 Jati Martopranoto, Biodiversity Researcher, Bogor, Indonesia (*Left April 2009*)
 Marzuki Marzuki, Nursery Specialist, Aceh, Indonesia (*Left January 2009*)
 Maybelline Mendoza, Project Accountant, ICRAF-AECI Project, Los Banos, Philippines (*Left September 2008*)
 Agustin Mercado, Associate Research Officer, Claveria, Philippines
 Zhilin Mu, Driver, Kunming, China
 Usman Muchlish, IT Officer, Bogor, Indonesia
 Efrin Muharrom, Project Manager Packard Project, Bogor, Indonesia
 Mutia Mulasih, Accountant, Bogor, Indonesia
 Elok Mulyoutami, Local Knowledge & Social Science Assistant, Bogor, Indonesia
 Hai Nguyen, Technical Project Manager, Hanoi, Vietnam
 Hoang Nguyen, Research, Hanoi, Vietnam
 Minh Nguyen, Finance & Admin, Hanoi, Vietnam
 Ery Nugraha, Agroforestry Coordination Officer (Muellaboh), Halimun, Indonesia (*Left October 2008*)
 Dudy Nugroho, GIS Assistant, Bogor, Indonesia (*Left December 2008*)
 Irma Nurhayati, RUPES Project Assistant, Bogor, Indonesia
 Rachman Pasha, Community Facilitator, Sibolga, Indonesia
 Gamal Pasya, NSS Fellow, Bogor, Indonesia
 Duc Pham, Finance & Admin, Hanoi, Vietnam
 Andi Prahmono, Enumerator, Muara Bungo (Jambi), Indonesia (*Left January 2009*)
 Wahyu Priono, Human Resources Officer, Bogor, Indonesia (*Left September 2008*)
 Pratiknyo Purnomosidhi, Site Manager, Bogor, Indonesia
 Andree Putra, Remote Sensing Specialist, Bogor, Indonesia
 Maria Quintos, Senior Secretary, Los Banos, Philippines
 Subekti Rahayu, Secretary/Database Manager, Bogor, Indonesia
 Ma. Jesusa Rafinan, Administrative Assistant, Claveria, Philippines
 Yeni Rahmawati, Human Resource Officer, Bogor, Indonesia
 Katarina Riswandi, Functional Unit Assistant, Bogor, Indonesia
 James Roshetko, Tree and Market Specialist, Bogor, Indonesia
 Zuraidah Said, GIS Assistant, Bogor, Indonesia
 Sonya Santoso, Spatial Analyst, Bogor, Indonesia
 Atang Senjaya, Office Service Assistant, Bogor, Indonesia
 Anang Setiawan, West Lampung NSS Coordinator, Aceh, Indonesia (*Left February 2009*)
 Erik Setiawan, Research Assistant, Bogor, Indonesia
 Retno Setyowati, Regional Office Secretary, Bogor, Indonesia
 Martua Sirait, Policy Analyst, Aceh, Indonesia
 Muhammad Sofiyuddin, Research Assistant Agricultural Economics, Bogor, Indonesia
 Yufang Su, Project Manager, Kunming, China
 Endri Subagyo, Program Support Assistant, Lampung Sumberjaya, Indonesia (*Left February 2009*)
 Rachmat Sujadi, Driver, Bogor, Indonesia (*Left December 2008*)
 Suparman Supardi, Driver, Bogor, Indonesia
 Betha Supriana, Research Officer – Ecological Modelling, Bogor, Indonesia
 Mulus Surgana D, Nursery Specialist, Aceh, Indonesia (*Left January 2009*)
 Sutarja, Driver, Bogor, Indonesia
 Desi Suyanto, Landscape Modeller, Bogor, Indonesia
 Suyanto Suyanto, Environmental Economist, Bogor, Indonesia
 Yosi Tapjani, Enumerator, Bogor, Indonesia (*Left February 2009*)
 Jusupta Tarigan, Agroforestry Livelihood Specialist, Bogor, Indonesia
 Ahmad Taufik, Computer Programmer, Bogor, Indonesia
 Timm Tennigkeit, CIM Expert, Kunming, China
 David Thomas, Country Representative, Chiang Mai, Thailand
 Atikah Tikah, Desktop Publisher, Bogor, Indonesia
 Vi Tu, Research, Hanoi, Vietnam
 Retno Utaira, Management Service Leader, Bogor, Indonesia
 Meine Van Noordwijk, Chief Science Advisor, Bogor, Indonesia
 Mingming Wang, Administrative Assistant, Kunming, China
 Atiek Widayati, Spatial Analyst, Bogor, Indonesia
 Andreas Wilkes, Head of Programme Development, Beijing, China
 Diah Wulandari, Tul Sea Project Officer, Bogor, Indonesia
 Jianchu Xu, Country Representative, Kunming, China
 Mei Yan, Project Assistant, Kunming, China
 Hai Yang, Project Assistant, Kunming, China
 Mei Yang, Administrative Assistant, Kunming, China
 Yifei Zhang, Accountant, Kunming, China
 Teuku Zulafdhli, District Coordinator, Aceh, Indonesia (*Left January 2009*)

Consultant

Hairiah Kurniatun

Investors 2008

Donor Name	Unrestricted US\$ '000	Restricted US\$ '000	Total US\$ '000
Ireland	1,478	1,443	2,921
United States of America(USAID)* *	551	2,041	2,592
World Bank *	1,630	683	2,313
European Union		1,883	1,883
Bill and Melinda Gates Foundation *		1,752	1,752
Canada(CIDA)	1,004	453	1,457
Norway *	1,055	384	1,439
United Kingdom (DFID)	1,034	294	1,328
Netherlands	734	542	1,276
Denmark	1,136		1,136
Finland	821	263	1,084
Swedish International Development Cooperation Agency	416	654	1,070
International Fund for Agricultural Development		1,002	1,002
Germany	443	414	857
Switzerland *	489	96	585
Royal Swedish Academy of Agriculture and Forestry- KSLA		552	552
Belgium	504	37	541
Heifer International		497	497
Ford Foundation		473	473
Italy		345	345
Australian Aid	220	69	289
Multidonor		268	268
Food and Agriculture Organization of the United Nations		220	220
International Development Research Centre		220	220
The Centre for International Forestry Research CIFOR		216	216
Austria		208	208
CGIAR - Secretariat		200	200
ACDI/VOCA Rwanda		153	153
Japan	8	143	151
Katholic University		151	151
Internationale en Recherche Agronomique pour le Développement (CIRAD)		150	150
Rockefeller Foundation *		133	133
World Wildlife Fund		125	125
Centre for Mountain Ecosystem Studies		115	115
United Nations Environmental Programme		109	109
Brazil		103	103
Global Environment Facility		97	97
Africa Wildlife Foundation		96	96
Association for Strengthening Agriculture Research in Eastern and Central Africa		89	89
Spain		88	88
Global Mountain Programme		86	86
United Nations Development Programme		81	81
Australian Centre for International Agricultural Research		78	78
Partnership for Governance Reforms in Indonesia		67	67
South Africa	60		60
North Carolina State University		59	59
Unilever		57	57
Centre for cultural and Technical interchange between East and Wesat, Inc		49	49
CARE International		44	44
Peru		44	44
Upland Development Programme in Southern Mindanao		43	43
Mars Inc		42	42
INIA-Spain		41	41
Syngenta *		39	39

* Also contributes to CGIAR Gender and Diversity

* AWARD

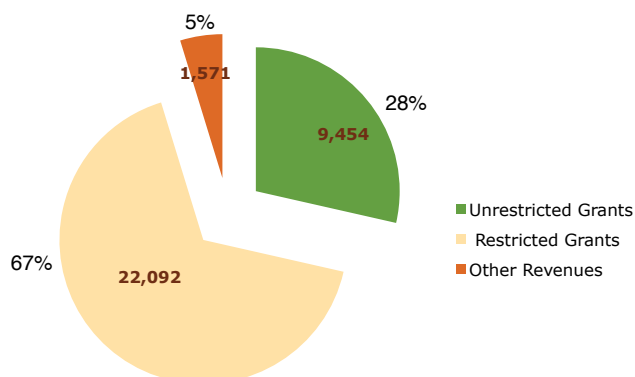
Donor Name	Unrestricted US\$ '000	Restricted US\$ '000	Total US\$ '000
International Rice Research Institute		37	37
Earth Institute - Columbia University		32	32
Harvard University		31	31
Plan International		31	31
Rights and Resources Group		27	27
China	20	6	26
International Food Policy Research Institute		26	26
National Science Foundation		24	24
Asia-Pacific Network for Global Change Research		24	24
Natural Resources Institute		21	21
Swiss Development Corporation		21	21
Darwin Initiative		19	19
International Livestock Research Institute		18	18
Danish Centre for Forest, Landscape and Planning		18	18
United Nations Office at Nairobi		18	18
IFAR Wilfried Thalwitz Scholarship		17	17
International Crop Research Institute for the Semi Arid tropics		15	15
Consultative Group on International Agricultural Research		15	15
Forum for Agricultural Research in Africa		15	15
McKnight Foundation		14	14
Centro Internacional de Agricultural Tropical, Colombia		14	14
Comart Foundation		13	13
AGEFO		12	12
Tinker Foundation		11	11
Conservation International Foundation		11	11
Technical Centre for Agricultural and Rural Co-operation		10	10
Kenya		10	10
Philippines	10		10
Thailand	10		10
Cornell University		10	10
Institute for Environmental Innovation		10	10
World Food Programme		10	10
Government of Rwanda		9	9
World Conservation Union		8	8
Indonesia Palm Oil Board		7	7
Centro Internacional de la Papa		7	7
Send A Cow Rwanda		7	7
Aid to Africa	7		7
Institute for Law and Environmental Governance		5	5
Leibniz Centre for Agricultural Landscape Research e.V.		4	4
International Plant Genetic Resources Institute		4	4
Africa Now		3	3
Bogor Institute of Agriculture		3	3
Centre for Biodiversity and Indigenous Knowledge		2	2
Dian Tama Foundation		2	2
SARCS Secretariat		1	1
Japan International Research Center For Agricultural Sciences		1	1
World Resources Institute		1	1
Global Dimension Trust		1	1
Forest Peoples Programme		1	1
University of Utrecht		0	0
Institute of International Education Inc		0	0
Sunshine Technology Group Limited		0	0
United States Department of Agriculture			-
Cooperation of Common Fund for Commodities		(136)	(136)
TOTAL	11,630	17,961	29,591

Financial Highlights For the year ended 31 December 2008

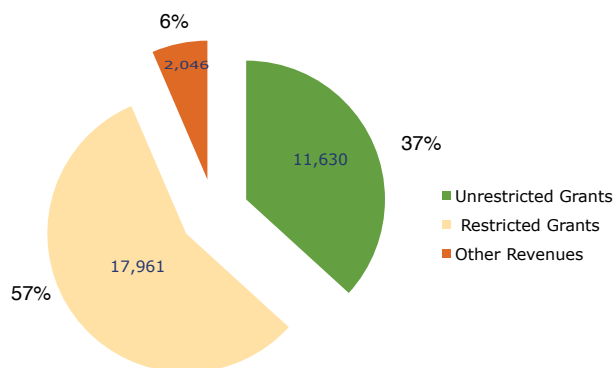
STATEMENT OF FINANCIAL POSITION (In US Dollars '000)

	2008	2007
ASSETS		
Current Assets		
Cash and cash equivalents	21,175	18,851
Accounts receivable		
Donor	6,936	7,487
Employees	123	74
Other CGIAR Centres	476	576
Other	1,828	2,251
Inventories - net	103	91
Prepaid expenses	332	35
Total current assets	30,973	29,365
Non-Current Assets		
Property and equipment - net	5,285	5,444
Total Non-Current Assets	5,285	5,444
TOTAL ASSETS	36,258	34,809
LIABILITIES AND NET ASSETS		
Current Liabilities		
Accounts payable		
Donor	7,742	8,943
Employees	719	967
Other CGIAR Centres	302	177
Other	1,399	1,304
Accruals	3,471	3,669
Total Current Liabilities	13,633	15,060
Non-Current Liabilities		
Accounts payable		
Employees	3,862	4,020
Total Non-Current Liabilities	3,862	4,020
TOTAL LIABILITIES	17,495	19,080
NET ASSETS		
Unrestricted		
Designated	12,168	9,168
Undesignated	6,595	6,561
	18,763	15,729
TOTAL LIABILITIES AND NET ASSETS	36,258	34,809

Income 2007 (USD)



Income 2008 (USD)



STATEMENT OF ACTIVITIES (In US Dollars '000)

	2008			2007	
	Unrestricted	Restricted		Total	Total
		Temporarily	Challenge Programmes		
Revenue, Gains and other Support					
Grant revenue	11,630	17,949	12	29,591	31,546
Other revenue and gains	2,046	-	-	2,046	1,571
Total revenue and gains	13,676	17,949	12	31,637	33,117
Expenses and Losses					
Programme related expenses	8,186	15,116	12	23,314	26,842
Management and general expenses	4,406	82	-	4,488	4,244
CGIAR Gender and Diversity programme	-	2,751	-	2,751	1,575
Sub total expenses and losses	12,592	17,949	12	30,553	32,661
Overhead cost recovery	(1,950)	-	-	(1,950)	(2,270)
Total expenses and losses	10,642	17,949	12	28,603	30,391
Surplus for the year	3,034	-	-	3,034	2,726
Expenses by Natural Classification					
Personnel cost	6,662	5,170	7	11,839	12,441
Supplies and services	1,918	7,041	5	8,964	9,063
Collaborators/partnerships	552	2,811	-	3,363	4,206
Operational travel	912	2,559	-	3,471	3,636
Depreciation	598	368	-	966	1,045
Total	10,642	17,949	12	28,603	30,391

The Centre's Audited Financial Statements 2008 can be downloaded from our website <http://www.worldagroforestry.org/downloads/publications/PDFs/RP16135.PDF>

Board Statement on Risk Management

The Board of Trustees and Management of World Agroforestry reviewed implementation of the risk management framework during 2008 and the Board is satisfied with the progress that has been made.

The Board of Trustees is responsible for ensuring appropriate risk management processes are in place to identify and manage significant current and emerging risks to the achievement of the Centre's business objectives, and to ensure alignment with CGIAR principles and guidelines as adopted by all CGIAR Centres. Such risks include operational, financial and reputation risks inherent in the nature, *modus operandi* and locations of the Centre's activities. These risks are dynamic owing to the environment in which the Centre operates. There is potential for loss resulting from inadequate or failed internal processes or systems, human factors or external events. Risks include:

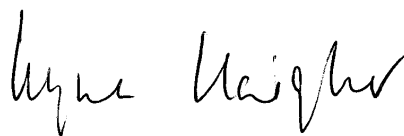
- misallocation of scientific efforts away from agreed priorities;
- loss of reputation for scientific excellence and integrity;
- business disruption and information system failure;
- liquidity problems;
- transaction processing failures;
- loss of assets, including information assets;
- failure to recruit, retain and effectively utilize qualified and experienced staff;
- failures in staff health and safety systems;
- failures in the execution of legal, fiduciary and Centre responsibilities;
- withdrawal or reduction of funding by donors due to the global financial crisis;
- potential negative impact of the CGIAR change management process in terms of funding or non-prioritization of agroforestry; and
- subsidization of the cost of projects funded from restricted grants and/or partial non-delivery of promised outputs, due to inadequate costing of restricted projects.

The Board has adopted a risk management policy that includes a framework by which the Centre's management: identifies, evaluates and prioritizes risks and opportunities across the organization; develops risk mitigation strategies which balance benefits with costs; monitors the implementation of these strategies; and periodically reports to the Board on results. This process draws on risk assessments and analysis prepared by staff of

the Centre's business unit, internal auditors, Centre-commissioned external reviewers and external auditors. The risk assessments also incorporate the results of collaborative risk assessments with other CGIAR Centres, System Office components, and other entities in relation to shared risks arising from jointly managed activities. The risk management framework is aiming for best practice, as documented in the codes and standards of a number of CGIAR member countries. The framework is subject to ongoing review as part of the Centre's continuous improvement efforts.

Risk mitigation strategies include implementation of systems of internal controls which, by their nature, are designed to manage rather than eliminate risk. The Centre endeavours to manage risk by ensuring appropriate infrastructure, controls, systems and people are in place throughout the organization. Key practices employed in managing risks and opportunities include business environmental scans, clear policies and accountabilities, transaction approval frameworks, financial and management reporting, and the monitoring of metrics designed to highlight positive or negative performance of individuals and business processes across a broad range of key performance areas. The design and effectiveness of the risk management framework and internal controls is subject to ongoing review by the Centre's internal audit service, which is independent of the business units and which reports on the results of its audits to the Director General and the Board through its Audit Committee.

The Board also remains very much aware of the impact of external events over which the Centre has no control other than to monitor and, as the occasion arises, to provide mitigation.



Lynn Haight
Chair
Board of Trustees

Performance Indicators

38

1. Composite measure of Centre research publications: 6.5

1A: Number of externally peer-reviewed publications per scientist in 2008 that are published in journals listed in Thomson Scientific/ ISI: 2.13

1B: Number of externally peer-reviewed publications per scientist in 2008 (excluding articles published in journals listed in the Thomson Scientific/ ISI): 2.0

1C: Relative rating of Centre's best publications regarding journal impact factor: 2.37

2. Percentage of scientific papers that are published with developing country partners in refereed journals, conference and workshop proceedings in 2008: 45.67

3. SC assessment of Centre Outcome reports: 6.7

4. Composite Indicator on Centre Impact Assessment Culture: 72.0

Institutional Health

Governance

5A: Summary score on governance checklist: 93.5

5B: Assessment of Board statements: 3.5

Culture of learning and change

5C: Summary score on culture of learning and change checklist: 65.2

Diversity

5D: Percentage of women in management: 33

5E: IRS Nationality Concentration: First most prevalent nationality – UK, 5; Second most prevalent nationality, Belgium, Germany, USA, 4 each.

Financial Health

6A: Long-term financial stability (adequacy of reserves): 178 days where the minimum benchmark is 75 days.

6B: Cash Management on Restricted Operations: 0.7 where the benchmark is less than 1.0.

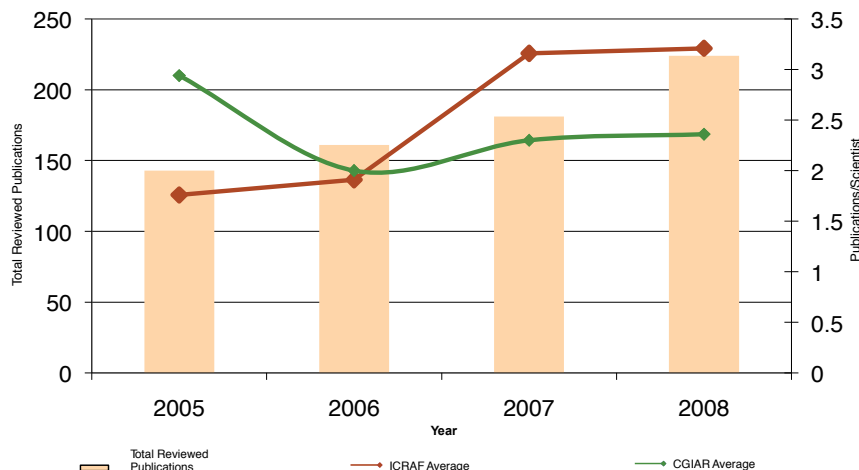
Our Partners

Academy of Educational Development (AED)
African Academy of Sciences (AAS)
African Forest Forum (AFF)
African Forestry Research Network (AFORNET)
African Institute for Capacity Development (AICAD)
African Virtual University Project (AVU)
African Network for Agriculture Agroforestry and Natural Resources Education (ANAFE)
Agricultural Open Curriculum and Learning Initiative (AGROCURI)
Amazon Initiative
Amhara Region Agricultural Research Institute (ARARI)
Asia - Pacific Agroforestry Network (APAN)
Asia-Pacific Association of Agricultural Research Institutions (APAARI)
Association for Strengthening Agriculture Research in Eastern and Central Africa (ASARECA)
ARC Seibersdorf research (in Vienna)
Australian Centre for International Agricultural Research (ACIAR)
Australian Tree Seed Centre
Biodiversity Transect Monitoring Analysis in Africa (BIOTA in Kenya)
Bioversity International
Bogor Agricultural University, Indonesia
Bruker Optics, Germany
Bunda College, Malawi
Bureau of Agriculture and Rural Development - Amhara Regional State (Ethiopia)
Bureau of Environmental Analysis, International (BEA Kenya)
Bureau of Soils and Water Management, Philippines
CAB International
CARE International
Center for International Earth Science Information Networks at Columbia Earth Institute (CIESIN)
Central Mindanao University (Philippines)
Centre de cooperation internationale en recherche agronomique pour le développement (CIRAD)
Centre de Recherche Agronomique de Foulaya (IRAG), Guinea
Centre for Environment Research, Education and Development (CERED), Vietnam
Centre for International Forestry Research (CIFOR)
Centro de Investigacao e Formacao Tropical (Portugual)
Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)
Coffee Agroforestry Network (CAFNET)
Chiang Mai University
Chinese Academy of Agricultural Sciences (CAAS)
Chinese Academy of Sciences (CAS)
CINCS, LLC (U.S.A)
Comité Permanent Inter-Etats de Lutte Contre la Sécheresse au Sahel (CILSS)
Commercial Products from the Wild, Department of Forest and Wood Science, University of Stellenbosch
Commission des Forêts d'Afrique Centrale (COMIFAC)
Common Market for Eastern and Southern Africa (COMESA)
Commonwealth of Learning
Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Comprehensive African Agriculture Development Plan (CAADP)
Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricole (CORAF/WECARD)
Conservation International Foundation (Washington)
Concern Worldwide (Burundi)
Convention on Biological Diversity – Secretariat (Canada)
Coffee Research Foundation (CRF)
Coopérative pour la Promotion des Activités Café (COOPAC)
CORAF/WECARD
Cornell University, USA
Council for Agriculture Research Policy (CARP), Sri Lanka
Danish Forest Seed Centre
Department of Agricultural Extension Services, Ministry of Agriculture, Malawi (DAES)
Department of Agricultural Services, Ministry of Agriculture, Malawi (DARS)
Department of Animal Health and Livestock Development (DAHLD)
Department of Environment and Natural Resources, the Philippines
Department of Agricultural Research and Extension, Ministry of Agriculture, Tanzania
Department of Agricultural Research and Extension, Ministry of Agriculture, Zambia
Department of Forestry, Malawi (DF)
Diversitas - International Programme of Biodiversity Science
East African Community (EAC)
EAST College, Embu, Kenya
Eastern Africa Sub-Regional Development Centre of the Economic Commission of Africa(ECA/EASRDC)
Earth Institute – Columbia University
East and Central African Programme for Agricultural Policy Analysis (ECAPAPA)
Egerton University, Kenya
European Forestry Institute
Food Agriculture and Natural Resources Policy Analysis Network (FARNPAN)
Food and Agriculture Organization of the United Nations (FAO)
Forestry Research Network for sub-Saharan Africa (FORNESSA)
Forest Science Institute of Vietnam (FSIV)
Forum for Agricultural Research in Africa (FARA)
Foundation for Advanced Studies in International Development (FASID), Japan
Foundation for Ecological Security, India
Genesys Foundation (Philippines)
George-August Universitat Gottingen (GAUG) (Germany)
Ghana Standards Board
Ghent University, Belgium
Global Information Internship Program (GIIP), USA
Govind Ballabh Pant University of Agriculture and Technology (GBPUAT), India
Government of the Republic of Indonesia
Government of the Republic of Zambia
Government of Zimbabwe
Harvard University
Hohenheim University, Germany
International Centre of Insect Physiology and Ecology (ICIPE)

Indian Council for Agricultural Research
 Indonesia Palm Oil
 Indonesian Research Institute for Estate Crops (LRPI)
 Indonesian Soil Research Institute
 Institute d'Economie Rurale (IER), Mali
 Instituto de Investigaciones de la Amazonia Peruana (IIAP)
 Institute Perrtanian Bogor, Indonesia
 International Atomic Energy Agency (Austria)
 International Tropical Timber Organization (IITO)
 International Livestock Research Institute (ILRI)
 International Centre for Research in the Semi-Arid Tropics (ICRISAT)
 International Centre for Underutilised Crops
 International Food Policy Research Institute (IFPRI)
 International Institute of Tropical Agriculture (IITA)
 International Society for Horticultural Science
 International Water Management Institute (IWMI)
 Institut de l'Environnement et de Recherches Agricoles (INERA), Burkina Faso
 Institut Polytechnique Rural de Katibougou (IPR-Mali)
 Institut de recherche scientifique et technique appliquée, ISRA, Senegal
 Instituto Nacional de Investigacion Agraria (INIA)Peru
 Institut National de la Recherche Agronomique du Niger (INRAN), Niger
 Institut du Sahel - Comite permanent Interetats de Lutte contre la Secheresse dans la Sahel (INSAH/CILSS)
 Institut de Recherche Scientifique et Technologique (IRST) (Rwanda)
 Institut Senegalais de Recherches Agricoles (ISRA)
 Jomo Kenyatta University for Agriculture and Technology, Kenya
 Kenya Agricultural Research Institute
 KEFRI
 Kennedy School of Environment
 Kenyat University
 Landcare Foundation of the Philippines
 Land Resources Conservation Department (LRCD)Malawi
 Leyte State University (LSU)/ Visayas State University (Philippines)
 Makerere University, Uganda
 Meru Dryland Framing Project (MDFP)
 Michigan State University
 Ministry of Agriculture, Forest and Food Security the Republic of Sierra Leone (MAFFS)
 Ministry of Natural Resources and Environment (MONRE), Vietnam
 Misamis Oriental State College of Agriculture and Technology (MOSCAT)
 Mozambique National Institute of Agronomic Research (IIAM)
 Mzuzu University (Department of Forestry) (Malawi)
 National Centre for Competence in Research North-South (NCCR N-S) Switzerland
 National Center for Agriculture Policy Research (India)
 National Corporation for Research and Forestry Promotion(CONIF)
 National Farmer Association of Malawi (NASFAM)
 National University of Rwanda
 National University of Laos, Lao PDR
 New Mexico State University
 New Partnership for Africa's Development (NEPAD)
 Nihon University (Japan)
 NIRAS, Sweden
 North Carolina State University
 Norwegian Institute for Agricultural and Environmental Research (BioForsk), Norway
 OASIS Challenge Program
 Philippine Council for Agriculture, Forestry and Natural Resources and Development (PCARRD)
 ProAmbiente Programme, Brazil
 Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)
 Rights and Resources Innitiaves (RRI) USA
 Royal Veterinary And Agricultural University (KVL-Denmark)
 Rubber Research Institute Nigeria
 SAC Rwanda - Send A Cow, Rwanda
 Scottish Crop Research Institute
 Sokoine University of Agriculture (SUA)
 South African Development Community (SADC) - Tree Seed Centre Network
 Southeast Asian Regional Centre for Graduate Study (SEARCA)
 Sub-Saharan Africa Challenge Programme (SSA-CP)
 Swedish University of Agricultural Sciences (SLU)
 Swedish VI Programme in Lake Victoria
 Technical Centre for Agricultural and Rural Co-operation (CTA)
 Tegemeo Institute of Egerton University, Kenya
 Trees on Farm Network (TOFNET)
 Tropical Soil Biology and Fertility Institute-CIAT
 United Nations Development Programme (UNDP)
 United Nations Environment Programme (UNEP)
 United Nations Framework Convention on Climate Change (UNFCCC)
 University of Applied Life Sciences, Vienna (UNI BOKU Vienna)
 University of California at Berkeley, USA
 University of California, Davis, USA
 University College Dublin
 University of Copenhagen, Denmark
 University for Development Studies, Ghana
 University of Florida, USA
 University of Laval, Montreal, Canada
 University of Leuven, Belgium
 University of Newcastle, Australia
 University of Nairobi, Kenya
 University of Peradeniya, Sri Lanka
 University of the Philippines
 Vi Agroforestry Programme (Vi AFP) Sweden
 Vietnam Agricultural Science Institute (VASI)
 WAMI/RUVU Basin Water Office (Tanzania)
 William J. Clinton Foundtion
 Winrock International
 World Bank
 World Vision Kenya
 World Vision International
 World Forests, Society and Environment Research Programme

Publications

Peer-reviewed publications



The number of peer-reviewed journal publications rose by over 43% in 2008

Book chapters

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Muir-Leresche, K.; Coe, R. 2009. **Your research proposal - hypotheses, objectives and research questions.** In: Muir-Leresche, K., Coe, R.

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Swallow, B.; Meinzen-Dick, R. World Agroforestry Centre (ICRAF), Nairobi (Kenya) 2009. **Payment for environmental services: interactions with property rights and collective action.** In: Beckmann, V. and Padmanabhan, M. (eds.). 2009. Institutions and sustainability, Springer Science+Business Media B.V. p. 243-265. ICRAFF [2009004]

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Pye-Smith, C. 2009. **Seeds of hope: a public-private partnership to domesticate a native tree, Allanblackia, is transforming lives in rural Africa.** -- Nairobi, Kenya: World Agroforestry Centre (ICRAF) Trees for change no. 2, 31p.. 630*7 PYE ICRAFF [B16262]
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World Agroforestry Centre (ICRAF), Nairobi (Kenya) 2009. Creating an evergreen Agriculture in Africa for food security and environmental resilience. -- Nairobi, Kenya: World Agroforestry Centre (ICRAF) 29p.. ICRAFF [2009008]
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