



# FARMING TREES, BANISHING HUNGER

How an agroforestry programme is helping smallholders in Malawi to grow more food and improve their livelihoods



World Agroforestry Centre  
TRANSFORMING LIVES AND LANDSCAPES





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## About the World Agroforestry Centre

The World Agroforestry Centre is an autonomous, non-profit research organization whose vision is a rural transformation in the developing world resulting in a massive increase in the use of trees in rural landscapes by smallholder households for improved food security, nutrition, income, health, shelter, energy and environmental sustainability. The Centre generates science-based knowledge about the diverse role that trees play in agricultural landscapes, and uses its research to advance policies and practices that benefit the poor and the environment. We are one of the 15 centres of the Consultative Group on International Agricultural Research (CGIAR).

Headquartered in Nairobi, Kenya, we operate five regional offices located in Brazil, Cameroon, Indonesia, Kenya, and Malawi, and conduct research in eighteen other countries around the developing world.

We receive our funding from over 50 different governments, private foundations, international organizations and regional development banks. Our current top ten donors are Canada, the European Union, the International Fund for Agricultural Development (IFAD), Ireland, the Netherlands, Norway, Sweden, the United Kingdom, the United States of America and the World Bank.

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## FOREWORD

This booklet tells the story of Malawi's Agroforestry Food Security Programme. Funded by Irish Aid and coordinated by the World Agroforestry Centre (ICRAF), in partnership with a consortium of national institutions, the four-year programme will enable at least 200,000 families – or around 1.3 million of the poorest people in Malawi – to increase their food production and enhance their nutrition. At the same time, the programme will do much to improve soil fertility and restore degraded farmland. All of this will be done by encouraging farmers to use the agroforestry technologies developed by the World Agroforestry Centre and its partners over more than a decade of research in Southern Africa.

During recent years, thousands of farming families – some of their stories are told here – have dramatically increased their welfare, and that of their land, by planting trees which capture atmospheric nitrogen, and by incorporating into their small farms a range of







trees which yield fruit, firewood and livestock fodder. The benefits of these agroforestry technologies are clear; the task now is to promote their use throughout Malawi. This is precisely what the Agroforestry Food Security Programme is doing. During 2007, the programme supported almost 90,000 smallholder farmers by providing seeds, seedlings, nursery materials and training. This is just a beginning. These farmers will receive further support over the coming years, ensuring that they become self-sufficient and confident enough to share their skills with their neighbours.

The World Agroforestry Centre and its national partners in Malawi would like to express their thanks to Irish Aid for its strong commitment to adopting science-based solutions to tackle hunger and poverty. Irish Aid's faith in developing perennial solutions to perennial problems is exemplary, and its support, amounting to at least US\$4 million over four years, should make hunger a thing of the past for a significant number of people in Malawi.

*Tony Simons,  
Programme Manager and Deputy Director General,  
World Agroforestry Centre*





# 1. TACKLING THE HUNGER CRISIS

## The problem

Malawi suffers from acute food shortages and frequently relies on food aid to feed its growing population. Over a third of Malawians are undernourished and life expectancy is just 46 years. Around 80 per cent of the population depends for its survival on farming. As the size of land holdings continues to shrink, and soils become exhausted through continuous cropping without adequate soil replenishment, many families have seen their maize yields decline.

Some years have been particularly difficult. The drought of 2002 led to the worst period of famine in half a century: over 3 million Malawians required food aid to survive. That year a survey by the World Agroforestry Centre found that 80 per cent of smallholder farmers in certain areas lacked food between November and February, the busiest period in the agricultural calendar. There was another bad year in 2005, and this prompted the government, with the help of donors, to introduce a fertilizer and seed subsidy programme. Some 2 million households benefited. The impact was considerable: in 2006, the country had a record maize harvest.



▲ To feed a growing population, agricultural production in Malawi needs to be stepped up.

But such short-term fixes are unsustainable, environmentally as well as economically: continuous cropping using artificial fertilizers alone is not a long-term option, as it fails to improve soil structure and texture. However, there is a solution, as increasing numbers of farmers have discovered over recent years.

## The way forward

Mariko Majoni lives in the village of Jiya, midway between Blantyre and Zomba in the southern region of Malawi. When he retired from the prison service in the mid-1990s, he used some of his pension to buy mineral fertilizers. But before long the money was gone, and he had to do without fertilizers. His yields dropped dramatically. “In the early years, I got 30–40 bags of maize each harvest,” he recalls, “but when I stopped using fertilizers, I only got 6–9 bags.” The maize was stunted, the soil exhausted.

Mr. Majoni got in touch with World Agroforestry Centre scientists at the nearby Makoka Research Station, and they explained the benefits of using “fertilizer trees” – trees which can capture atmospheric nitrogen and incorporate it into the soil.



▲ Mariko Majoni loves his farm, which has been doing much better in the past few years thanks to the enriched soil and the improved maize.

He returned home with some seeds and began planting fertilizer trees. “People said I was studying to become a madman when they saw me planting trees in my fields,” recalls Mr. Majoni. And he had some doubts himself, as his yields remained stubbornly low for the first couple of years. But then things began to change. Every year he would cut back the bushy fertilizer trees and incorporate their leaves and twigs into the soil. His yields steadily increased, and he got over 70 bags of maize from the same plot of land in 2006 – even more than he used to get using expensive mineral fertilizers. “My soil is now very rich and much better at retaining water than it used to be,” explains Mr. Majoni. In fact, during a recent dry period some of his neighbours accused him of witchcraft – they thought he had attracted all the rains to his fields during the night – as his crops were in such good order.

Mr. Majoni now has enough maize for himself and his family and plenty left over to sell, even though he doesn’t use a single grain of bought-in commercial fertilizer. He can afford to hire help in his fields and has bought his wife a new bicycle. So impressed are many of his neighbours that they have decided to adopt the same agroforestry technologies. Being a great enthusiast, Mr. Majoni has assisted them, by providing seed, by training them how to use different fertilizer trees, and by helping them to set up village nurseries.



## The programme

The lack of food security in rural Malawi is directly linked to declining soil fertility, with nitrogen being the main limiting factor. However, this is not the only problem facing the 3.5 million farming households in Malawi. Many people, and especially children, suffer from protein and vitamin deficiencies. Milk is one source of protein, but both production and consumption in Malawi are very low. This is partly a result of the lack of high-quality animal fodder. Likewise, daily fruit consumption in Malawi is very low, at less than 30 grams per capita, approximately one-seventh of the level recommended by the World Health Organization. And there's another problem too: cooking maize and other foods requires fuelwood, which is in increasingly short supply.

To counter all these problems, the Agroforestry Food Security Programme is promoting not just the use of fertilizer trees, but trees which provide fruit, fodder and fuelwood. Over the next few pages, we describe how the programme combines sound science, based on many years of research, with effective partnerships to improve food security and the livelihoods of rural communities. The programme was initiated in January 2007 and it will run for four years. It involves seven national partners, with the key players on the ground, delivering services to farmers, being the Department of Agricultural Extension Services and the Land Resources Conservation Department. Although the World Agroforestry Centre is providing significant quantities of seed and seedlings, as well as training, its primary role is that of coordinator and scientific adviser.



▲ The Agroforestry Food Security Programme is promoting not just the use of fertilizer trees but also diversification of agricultural production into fruits, fodder and fuelwood.



During the first year, the programme targeted over 42,000 farming households in eight districts in eight Agricultural Development Divisions. They were provided with training and tree-planting materials. The main emphasis was on increasing the use of fertilizer and fuelwood trees, although some families also benefited from the provision of fruit trees. A further 10,000 smallholder dairy farmers in other parts of the country were also identified and introduced to the use of fodder trees. In addition, the programme reached out to some 7000 farmers belonging to Mapanga Community-based Organization – a pioneer in agroforestry in Thyolo District – and to 30,000 farmers belonging to the National Smallholder Farmers Association of Malawi (NASFAM).



▲ The programme is encouraging farmers to plant fruit trees - a valuable source of vitamins. Fatuma Kalipinde, manager of the World Agroforestry Centre tree nursery at Makoka Research Station, with *Vangueria infausta*, an indigenous species undergoing domestication.





## 2. REVIVING MALAWI'S EXHAUSTED SOILS

“In many parts of Malawi the soil is so exhausted that it’s impossible for small farmers to produce enough food to feed their families without using fertilizers,” explains Festus Akinnifesi, World Agroforestry Centre’s Regional Coordinator for Southern Africa. “Without fertilizers, they are lucky if they get 1 tonne of maize a hectare.” In the south of the country, the average family holding is 0.4 hectares, and farmers are simply not in position to leave land fallow to allow the soil to recover from cropping. The result, for those who don’t use fertilizers, is a loss of fertility, declining yields and hunger.

Research by the World Agroforestry Centre and its partners has established that the use of fertilizer trees can significantly boost crop yields and improve soil quality. There are several agroforestry systems that improve soil fertility. One of the most commonly used involves intercropping. Farmers plant nitrogen-fixing trees – the most popular is *Gliricidia sepium* – throughout their fields. The trees are periodically pruned back, and their leaves and other biomass are incorporated into the soil. “Using this system, farmers can double their yield of maize, or even triple it if they use a small quantity of mineral fertilizer – about a quarter of the recommended dose – at the same time,” explains Akinnifesi.



▲ Demonstration plots of maize intercropped with fertilizer trees in Salima District.

A ten-year experiment involving continuous cultivation of maize with *Gliricidia* yielded more than 5 tonnes per hectare in good years, and averaged 3.7 tonnes per hectare. This was without using any mineral fertilizers. Compare this with an average yield of 1 tonne or less in control plots without *Gliricidia* or mineral fertilizer.

Another system that is proving popular in areas where landholdings are larger involves a fallow rotation using short-lived, non-coppicing species. Over a two-year period, the use of nitrogen-fixing shrubs such as *Sesbania sesban* and *Tephrosia vogelii* can provide 100–250 kilograms of nitrogen per hectare. As a result maize yields can be more than doubled. The advantage of using *Gliricidia* intercropping is that the trees live for up to 20 years, whereas those used for non-coppicing fallows must be replaced after two or three cropping seasons, and the rotational fallow involves seasons where no food crop is grown.

## A fertilizer factory on the farm

The World Agroforestry Centre has calculated that if half a million farmers, each with 0.2 hectares, were to plant fertilizer trees, the amount of nitrogen they would fix in a year would be equivalent to 200 kilograms per hectare. If the farmers were buying this as mineral fertilizer, it would cost them US\$ 5.8 million a year. Little wonder, then, that Mariko Majoni of Jiya village describes the fertilizer trees that have enabled him to dramatically



▲ Nelson Mkwaila has no more trouble feeding his family since he introduced fertilizer trees like *Gliricidia* in his maize fields.



increase his maize harvests as a “fertilizer factory on the farm.” The monetary savings are just part of the story, as many Malawian families are discovering: fertilizer trees are improving human wellbeing in a variety of ways.

If you want to see what the future could look like, as good a place as any to start in is the rolling countryside about an hour’s drive south-east of Blantyre. In 2002, a range of factors – a lack of fuelwood, declining soil fertility, the HIV/AIDS crisis, the abuse of women by guards when fetching fuelwood from private forests – encouraged a group of villagers to establish the Mapanga Community-based Organization (CBO). In 2004, 32 members visited the Centre’s tree nursery at Makoka Research Station, where they learned how to raise *Gliricidia* and *Tephrosia* seedlings and how to use them in their fields. “We immediately saw that this new way of farming with trees was a brilliant idea,” explains Lawrence Zuze, the Director of the CBO. Since then, its membership has risen to some 50,000, almost 7,000 of whom are now using fertilizer trees.

“I have seen a big improvement in soil fertility in my field,” explains Esnath Chakalamasa, a widow and mother of seven children. In 2007, her fields yielded six 50 kilogram bags of maize. Not long ago, in the years before she began using *Gliricidia*, she harvested almost nothing as the soils were exhausted. Another widow, Mary Sabuloni, has also seen her maize yields increase since she began planting fertilizer trees.



▲ Aaron Nahawa, a farmer in Kalimbuka village, has significantly increased his maize yields by intercropping with *Gliricidia*.

“In the past, I used to get about 10 bags of maize from my fields,” she explains. “Now I get at least 25 bags.” In practical terms, this has made a big difference to her eight children. “Now I can feed my family all year round,” she says. “In the past, we often went hungry.” She adds that the *Gliricidia* trees also provide her with significant quantities of fuelwood.

## Scaling up

During its first year, the Agroforestry Food Security Programme distributed tree seeds weighing close to 23 tonnes and almost 3 million polythene tubes to be used as nursery pots. A total of 345 farmer groups and 17 individual nurseries were established, and 2,180,000 seedlings were raised.

Farmers have responded enthusiastically to the Agroforestry Food Security Programme. Take, for example, the village of Chiluwe, in Salima, one of the eight Agricultural Development Districts targeted by the programme. Here, 55 out of 85 farming families immediately decided to take advantage of the programme. There were, explains farmer William Temwende, a number of reasons for this. First, and most obviously, maize yields had been declining over recent years and few families harvested enough to sustain



▲ Mary Sabuloni is one of many widows to benefit from her association with the Mapanga Community-based Organization. Fertilizer trees have helped to increase her crop yields, and she is now growing her own fuelwood.

themselves. Second, he and other farmers had been taken to see the benefits of using fertilizer trees in another area. And third, the programme provided them with training, as well as seeds and the wherewithal to establish a village nursery.

“One of the great strengths of the programme,” suggests Kenneth Chaula, Principal Agricultural Extension Officer at the Ministry of Agriculture and Food Security, “is that it provides a complete package. Farmers not only get tree-planting materials, they are also given a thorough education about agroforestry and how to integrate trees on their farms.”

Mr. Temwende’s fields are now being used to demonstrate agroforestry technologies to other farmers. In one field, he has intercropped maize with *Gliricidia*; in another he has sown nitrogen-fixing pigeon peas with his maize. Thanks to the training he has received from the local agricultural extension services, he now talks knowledgeably about the benefits of agroforestry. “In two to three years time,” he says, “the soil will be more fertile and I will begin to get better maize harvests.” He also points out that the pruning of *Gliricidia* will provide fuelwood and poles for his tobacco barn, while the pigeon peas will provide a relish for his family as well as nitrogen for the soil.



▲ The programme is working with farmers like William Temwende to demonstrate the virtues of using fertilizer trees.







### 3. COUNTERING THE FUELWOOD CRISIS

The Agroforestry Food Security Programme is making strenuous efforts to help rural women. The high incidence of HIV/AIDS has meant that many women are widowed, and this is one reason why a significant proportion of the families targeted by the programme – 34 per cent – are headed by women. Besides their child-rearing duties, women are responsible for many other domestic chores, including the collection of fuelwood.

The fuelwood crisis has been particularly hard on women, as Lawrence Zuze, the director of Mapanga Community-based Organization, explains. “One of the main reasons why we established the organization was because we urgently needed to tackle the shortage of fuelwood,” he says. With many families having between 5 and 12 children, the population rose rapidly during the 1990s, leading to a scarcity of fuelwood and building timber.



▲ Self-sufficiency in fuelwood, means women don't have to visit the big tea and tobacco estates, where the guards force villagers to have sex in return for access to the forests. Weeding seedlings in one of the many nurseries set up by Mapanga Community-based Organization.

“People ran out of wood on their farms and they began cutting trees on riverbanks, but before long the only places they could find fuelwood was on the big tea and tobacco estates which surround us,” continues Mr. Zuze. “To get past the guards the women had to have sex with them, and as a result many caught HIV/AIDS. So death was coming to our villages.” The collateral damage is plain to see: there are over 3000 children with either no parents or one parent – out of a population of 50,000 – in Nansadi Ward.

After the villagers had established Mapanga Community-based Organization they began planting trees on farms, having received advice from World Agroforestry Centre scientists and other research institutes. The tree-planting activities have also benefited families in other ways.

For example, the dams dug for watering nurseries have been used as fish farms, and contributions from members have been used to provide care for orphans. The CBO has recently begun making and distributing fuel-efficient stoves. Now, the number of women who have to go to the tea and tobacco plantations to collect fuelwood is much reduced. “I used to be one of the women who went to the estates looking for fuelwood, and many of my friends perished as they were forced to negotiate with their bodies,” recalls Esnat Grem. “But for the past three years I haven’t had to go there, as I now get enough fuelwood from the trees we’ve planted.”



▲ Fuel-efficient stoves made by the Mapanga Community-based Organization.

New wood lots, and trees planted around the maize fields, are providing much more than fuelwood. Levison Khomaza, for example, has recently built a house with trees he has grown. He estimates that this has saved him over 5000 Malawi Kwacha (US\$35). Esnath Chakalamasa recently sold timber from her farm for 17,000 Malawi Kwacha (US\$120), and this has enabled her to pay school fees for three of her seven children.

## Reaching out to more farmers

The Mapanga story is particularly shocking – the women had no choice other than to succumb to the demands of the estate guards if they were to feed their families – but the shortage of fuelwood there is mirrored throughout much of the country. Approximately 90 per cent of the population depend on fuelwood and charcoal for their energy needs. When the population was relatively low – it stood at 5.3 million in 1975 – this wasn't much of a problem. Now, with a population of over 13 million, it is, and Malawi has one of the highest deforestation rates in Africa.

The Agroforestry Food Security Programme will significantly increase the amount of fuelwood grown by small farmers. This will not only satisfy local needs, it will take pressure off Malawi's remaining woodlands.



▲ Woodlots will provide a range of products, including small poles for tobacco barns.



Before the programme began, a series of consultations with villagers, extension services and research institutes identified six species ideally suited to being grown in wood lots or around fields. During the first year, approximately 15 per cent of the seeds distributed to farmers were fuelwood species, and large numbers of wood lots were established in the target areas.

When it comes to planting fuelwood species, women are often particularly active. For example, the committee responsible for planting fuelwood trees in Rayimon village, in Salima Agricultural Development District, consists of 20 women and six men. The village has been suffering from both declining soil fertility – many farmers are now planting nitrogen-fixing trees – and a shortage of fuelwood. In October 2007, following training sessions from the Agroforestry Food Security Programme, the villagers established a nursery in which they raised fertilizer, fuelwood and fruit trees. In early 2008, 840 trees were planted in a new wood lot, and a further 4000 around the periphery of the village. “We decided to go for species which provide multiple benefits,” explains Josiah Kahara, the chairman of the village committee. “Within a few years, we will have poles for our tobacco barns, building timber and sufficient fuelwood for the whole village.” This will save the women lengthy walks to a distant forest reserve, where they are currently allowed to collect fuelwood just one day a week.









## 4. FRUIT MATTERS

If farmers in Malawi grew more improved fruit trees, and fruits were more widely available, malnutrition and related diseases could be significantly reduced. Fruits are rich in vitamins, and vitamin deficiency is a major cause of disease. Take, for example, vitamin A. It is estimated that almost 600,000 children in Africa die every year from preventable diseases caused by vitamin A deficiency, including 17,500 in Malawi. There is also clear evidence to show that women who are deficient in vitamin A are more likely to pass HIV/AIDS on to their children through breast-feeding; and there seems to be a correlation between maternal vitamin A deficiency and infant mortality.

Besides providing vitamins, fruits provide water, energy, fatty acids, antioxidants and minerals. For those who grow them in sufficient quantities, they can also provide an income. Yet for most Malawians, eating fruit is a luxury. It needn't and shouldn't be. The climate is conducive to growing a wide range of fruit trees, and over 70 edible varieties are found in the miombo woodlands of east and southern Africa. "Fruit growing is rich in opportunities and it's something we are very keen to encourage," says Tony Simons, manager of the Agroforestry Food Security Programme. He points out that a couple of guava trees, growing outside the back door, can provide enough vitamin C to meet the needs of a family of six.



▲ Avocados are just the sort of snack the programme wants to encourage, being rich in proteins and vitamins. Vincent Kabade during a school break in Jiya village.

During the first year of the Agroforestry Food Security Programme, over 19,000 grafted fruit trees were delivered to farmers in the eight target districts, and over 100,000 rootstocks were raised in preparation for the second year. The number would have been considerably higher, but the high costs of buying grafted fruit trees encouraged the programme to adopt a different strategy. Instead, more resources were invested in developing community nurseries, so that villagers can produce seedlings for themselves in a manner which is sustainable. In addition to this, considerable effort was made to grow large quantities of rootstocks at several research stations across the country. Later on, scions will be collected from superior mother trees and grafted on to the rootstocks. This means many more fruit trees will be distributed in future years. Much of this work has built on previous research by the World Agroforestry Centre. This has involved the identification of preferred fruit tree species and varieties – by villagers and others – and the grafting of scions taken from these trees on to nursery rootstocks. These grafted trees tend to mature early, be large in size and produce fruit with a good taste.



▲ “Once the trees we’ve planted are mature,” says Lilinga Gabilyeli of Rayimon village, Salima District, “fruit will not longer be so scarce.”

## A glimpse of the future

A group of farmers in Chiradzulu District, between Blantyre and Zomba, have been doing precisely the sort of things which the Agroforestry Food Security Programme is now encouraging in the eight target districts. They have adopted a variety of agroforestry technologies, including the growing of fruit trees and the use of fertilizer trees to improve their soil fertility and increase their productivity and income.

In 1997, Nelson Mkwaila was having trouble feeding his family. He could no longer afford mineral fertilizers and his soil was in poor condition. On the advice of the World Agroforestry Centre, he began to use fertilizer trees like *Gliricidia* in his maize fields. His yields increased. Then in 2000, he and other members of his farmers' group visited the government's agricultural research station at Bvumbwe. Here, they learned about fruit trees and how to graft preferred scions on to rootstocks.

Today almost every corner of Mr. Mkwaila's farm which isn't devoted to annual crops is planted with fruit trees. He has guava, peach, banana, apple, paw paw and several other species. Some he sells; the rest sustains his family. "Now we have food for most of the year, and I notice that my health, and the health of my children is much better than it used to be," he says.



▲ Nelson Mkwaila collecting the fruits of his labour. Fruit trees provide extra income and contribute greatly to the family's health.



In fact, Mr. Mkwaila and his neighbours are doing precisely what the Centre believes farmers ought to do: they are growing a range of fruit trees which provide nourishment and vitamins throughout the year.

Tembo Chanyenga, Principal Forestry Officer with the Forestry Research Institute of Malawi (FRIM), one of the key partners involved with the Agroforestry Food Security Programme, believes that in five to ten years' time, Malawi's landscape could be dramatically transformed by the wave of tree-planting encouraged by the programme. "The landscape will be much richer in trees than it is now, and the soils more fertile," he says, "and I can foresee a time when farming families will be able to eat fruit every morning for breakfast."



▲ Today farmers are selling fresh fruits, earning extra income and at the same time providing a better quality diet for their family.



## 5. THE STORY SO FAR

### New partnerships

Approximately 60 per cent of all the funds available to the Agroforestry Food Security Programme go directly to the national partners: the Department of Agricultural Extension Services, the Land Resources Conservation Department and the Department of Agricultural Research Services, all of which come under the Ministry of Agriculture and Food Security; the Forestry Department and the Forestry Research Institute of Malawi, which come under the Ministry of Energy, Mines and Natural Resources; the National Smallholder Farmers Association of Malawi; and the universities of Malawi and Mzuzu.

“One of the most gratifying things has been the way our partners have taken ownership of the project,” explains World Agroforestry Centre’s Festus Akinnifesi. “We have encouraged them to take the driver’s seat, and that is exactly what they have done.” The partners clearly appreciate the Centre’s role too. “Whenever we need funds or technical support from the World Agroforestry Centre,” reflects Kenneth Chaula from the Department of Agricultural Extension Services, “they are immediately made available and given at the right time.”



▲ The programme will improve the health and welfare of well over a million people.



## The software of development: training

A survey of over 10,000 farmers, 31 key informants and 55 extension staff by the Extension Department of the Ministry of Agriculture provided insights into existing knowledge about agroforestry. Among extension staff, the knowledge about fodder trees, fruit orchards and agribusiness was weak. As for farmers, only 10 per cent of those canvassed in three of the target districts had grown fertilizer trees in the past, while none had used them in the other five districts. Just two per cent of farmers had grown fodder trees, and over 60 per cent lack the knowledge or skills needed to raise seedlings in nurseries and transplant them into fields.

Addressing these knowledge gaps lies at the heart of the programme, and training has involved a range of approaches tailored to meet the needs of farmers, government extension officers, non-governmental organizations and community-based organizations. During the first year, the programme established 344 on-farm demonstration plots, 123 roadside plots and eight Farmer Field Schools to showcase the different agroforestry technologies available in the eight target districts. There has been a strong emphasis on training the trainers. “Farmers are extremely important for up-scaling,” explains World Agroforestry Centre’s France Gondwe. “We’ve found that other farmers are far more likely to listen to their testimony about the benefits of agroforestry, than to that of outsiders.” During 2007, 2111 lead farmers or farmer trainers and 288 Extension staff were trained in seed handling, nursery management and agroforestry.



▲ Farmers are far more likely to follow the advice of their colleague-farmers than that of outsiders. The programme therefore puts a lot of emphasis on training the trainers.

## The hardware

By the end of the first year, farmers had been provided with more than 95,000 tree seed sachets, almost 3 million polythene tubes for nursery pots and 400 watering cans. Over 19,000 fruit trees were delivered to farmers in the eight target districts, and considerable effort was expended on developing community nurseries to produce fruit-tree seedlings in the future. During the year over 35 tonnes of agroforestry tree seed were procured, all but 1.2 tonnes internally. Half was sourced from smallholder farmers, while the rest came from institutional orchards managed by the World Agroforestry Centre, the Forestry Research Institute of Malawi and the Land Resources Centre in the Ministry of Agriculture and Food Security. Seven seed orchards were rehabilitated and over eight hectares of new seed orchards were established. A total of 345 farmer groups and 17 individual nurseries raised over 2.1 million seedlings. In addition, 31 group and 46 individual nurseries of fodder species were also set up in different parts of the country.

In order to help the partners and extension agencies deliver services efficiently, the Irish-funded Agroforestry Food Security Programme provided the following equipment: four vehicles, eight motorbikes, 80 bicycles, 10 computers and 10 printers and accessories, and nursery tools.

## Watch this space

During the second year of the food security programme, an additional 50,000 farmers will be reached, and by the end of the fourth year the programme will have provided training and assistance to the 200,000 farmers originally targeted. Farmers will be continually supported throughout the life of the programme, although support will gradually be reduced towards the end. By the end of the fourth year, farmers will have planted at least 50 million trees, assuming that each plants 10 fruit trees, 200 fertilizer trees, 30 woodlot trees and five other trees, such as fodder trees.

## Lessons for other countries

As the world grapples with a sharp increase in grain and fertilizer prices, the long-term research that the World Agroforestry Centre has conducted in Malawi, Zambia and Kenya on ‘fertilizer trees’ can offer affordable soil management solutions to poor African farmers. Extending the lessons to other countries will require strong partnerships with donors, national research and extension systems, civil society organizations and the private sector.







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