

Transformations

Quarterly

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World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

The World Agroforestry Centre (ICRAF) has invigorated the ancient practice of growing trees on farms, using innovative science for development to transform lives and landscapes.

The World Agroforestry Centre is part of a global network of 15 Future Harvest Centres supported by the Consultative Group on International Agricultural Research (CGIAR).

This is a quarterly newsletter of the World Agroforestry Centre in Nairobi, Kenya

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At 17 years of age, most young people have no idea what to pursue for a career. But Keith Shepherd was sure that soil science was it for him after reading the book *The World of the Soil*. "I was amazed by the sheer number and diversity of organisms in the soil."

Now 50, Dr Shepherd's considerable scientific career has included senior positions at the World Agroforestry Centre (ICRAF), and in universities and private research institutions. But to him, the application of infrared spectroscopy to soil analysis is the epitome of his achievements.

"Reflectance spectroscopy is a simple method. You just need to shine some light on a soil sample and collect the reflected light." From the 'reflectance fingerprint' Dr Shepherd and his colleagues at ICRAF are able to identify the type and composition of the soil. This information will enable extension workers to make precise recommendations to farmers on how to improve their depleted soils and boost productivity.

Broom cupboard

In the true fashion of scientific findings which often start with an unorthodox idea, Dr Shepherd realized its potential after locking himself in a broom cupboard at the ICRAF Nairobi campus to test out the method. After proving its effectiveness, he and his colleagues went on to apply it in the Lake Victoria re-



gion, where they used it to map soil erosion in Western Kenya.

By combining it with global positioning systems and satellite remote sensing, they have been able to produce large-scale maps that show exactly where soils have nutritional or erosion problems.

The method has also been applied in Madagascar, Uganda, Malawi, West Africa and Central Asia. Today, the innovation—developed by researchers in a developing country—has created widespread interest in universities across the United States and Europe. There exists further potential to apply the method to the analysis of a wide range of agricultural inputs and products.

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Quick results at 1/100th the cost

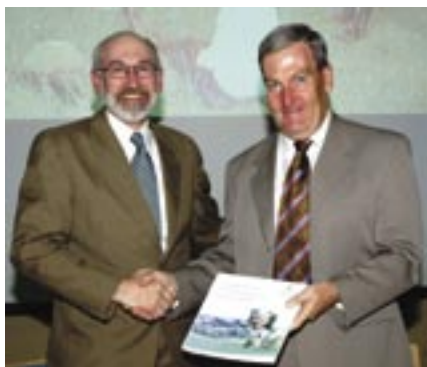
Reflectance spectroscopy reduces the cost of soil analysis from USD 50 to USD 0.5 per sample. And it's fast compared to traditional labour intensive laboratory methods. Reflectance spectroscopy allows scientists to analyze hundreds of soil samples in a day. But its most important advantage is that from the single 'reflectance fingerprint' you can determine numerous properties of a sample including nutrient content, soil type and composition.

The Rockefeller Foundation funded the spectroscopy research and Sida Sweden supported its application in Western Kenya

ICRAF Board meets in Tanzania

For the first time in its 15 years of active co-operation with the Tanzanian government, the World Agroforestry Centre's Board of Trustees held its annual meeting in Tanzania. Between 17-22 April 2005, sessions were hosted in Dar es Salaam, with field visits to the Shinyanga region to witness ICRAF's role in the revival of the traditional Ngitili system of natural resource management.

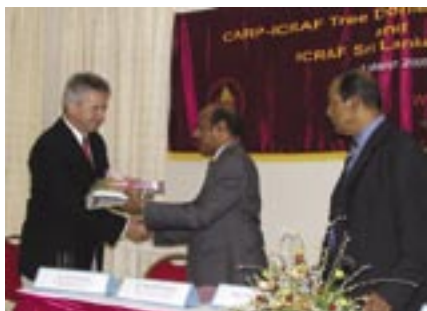
Photo: Standing (l to r): K Tanaka, S Ketema, DN Tewari, M Adams, R Lund, C Padoch, K van Dijk. Sitting (l to r): S Scherr, D Garrity, L Haight, E Terry, L Zhang, S Trindade. Absent from the photo are B Scholes and E Nwankwo, off to meet early flights, and R Kiomo, absent from the board meetings with apologies.



Australian government boosts Landcare project

Land degradation is a great concern for agricultural-based economies in Africa. To help address this issue, the World Agroforestry Centre (ICRAF) launched a new phase of the successful international Landcare project on Wednesday, 18 May 2005. At the event, the Australian High Commissioner to Kenya presented a grant for AUD 100 000 (USD 75 000) to support the initiative.

Photo: ICRAF Director General Dennis Garrity presents the Landcare in the Phillipines book to the Australian High Commissioner to Kenya, H E George Atkin.



ICRAF launches Sri Lanka program

On 7 March 2005, ICRAF Sri Lanka officially opened its offices—hosted at the Sri Lanka Council for Agriculture Research Policy (CARP) in Colombo—with a tree domestication workshop.

Photo: (from l to r) Dr T Simons, ICRAF Trees & Markets theme leader; Mr T Warnasuriya, Secretary, Ministry of Agriculture, Livestock, Lands and Irrigation; Prof. HPM Gunasena, Executive Director of the Council for Agricultural Research Policy (CARP) in Sri Lanka.

ICRAF Director general promotes trees on farms at UN Forum on Forests

ICRAF Director General Dennis Garrity spoke at the opening of the fifth United Nations Forum on Forests (UNFF5), a high level meeting focused on setting future goals for forest policy. Of the four big issues that emerged from the 1992 Earth Summit in Rio—forestry, biodiversity, climate change and desertification—forestry is the only one without a legally binding convention, a situation reviewed at UNFF5. The UNFF is guided by a small technical group called the Collaborative Partnership on Forestry (CPF), of which ICRAF is an active member.

ICRAF highlighted in TIME magazine and the New York Times

Fertilizer trees—a scientific farming approach developed by the World Agroforestry Centre that can triple maize yields—was mentioned in two recent stories in TIME magazine of 14 March 2005 (The end of poverty) and the New York Times of 5 May 2005 (A better way to fight poverty)

The World Agroforestry Centre has a new Internet site:

www.worldagroforestry.org



Artemisia annua is curing malaria, contributing to the sixth and fourth MDG goals aimed at combatting major illnesses including malaria and reducing child mortality.

Homegrown cure for malaria

Saving lives with a special variety of *Artemisia annua*

The World Health Organization (WHO) recently ranked Artemisinin-based drugs as the top defense against malaria, an illness that claims millions of lives each year. Although

first day. Other medicines take a few days.”

The World Agroforestry Centre (ICRAF), recognizing potential problems with *Artemisia* monotherapies, is working to combine it with

If you drink the tea, you feel better after the first day. Other medicines take a few days.

highly effective, these treatments remain too expensive for many who live in the tropics, where malaria is endemic.

Luckily, there is a powerful natural alternative. Published scientific studies show that the levels of artemisinin derivatives in the blood are high enough after drinking artemisia tea to treat malaria. Another recent study found that the plant's flavonoids enhance artemisinin activity, making the tea sometimes more effective than conventional drugs and decreasing the chances of drug resistance.

Ms Helen Meyer, a nurse operating nine mobile health clinics in rural Mozambique, is using the bitter tea made from the dried leaves of *Artemisia annua*. Even in treating drug resistant malaria, she has found the artemisia tea effective, “If you drink the tea, you feel better after the

indigenous herbal remedies made from other anti-malarial trees to produce a herbal combination therapy (HCT).

Making medicine using vegetative propagation

Establishing cultivation of the highly coveted woody shrub on small-scale farms to satisfy home use and market needs is critical.

Two years ago, ICRAF began growing a special hybrid of *Artemisia*, A-3, with seed provided by the Pressure Group on Action for Natural Medicines (Anamed).

A-3 is adapted for warmer climates. Where as wild varieties of *Artemisia* remain small in the tropics, A-3 can reach heights of 3m and contains 20 times more artemisinin.

ICRAF is facilitating the broad propagation of A-3 by teaching thousands of farmers how to cultivate *Artemisia*

from stem cuttings. The programme has extended to four districts in Tete Province—Angonia, Moatise, Tsangano and Makanga—located in North Western Mozambique.

Dubbed vegetative propagation, this technique is favoured because of the difficulty in growing plants from the tiny seeds. Just one gram of seed contains an estimated 12 000 seeds, each seed weighing a scant 0.07mg.

Dozens of *Artemisia* plants can be propagated from a single stem cutting. This makes for a lot of cheap

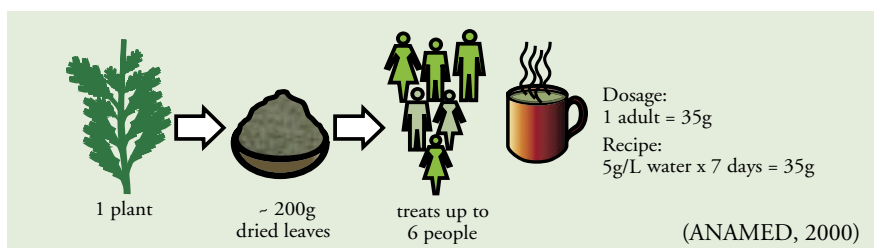


Artemisia seedlings at the ICRAF nursery Vila Ulongue, Mozambique

and effective medicine— one plant can cure up to six malaria patients.

Home ‘farmacies’

In addition to curing malaria at home, *Artemisia* treatments create big savings at the pharmacy for cash-strapped farmers and generate much needed income from selling *Artemisia* home remedies.



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Farmers are the foresters of the future

Domesticating forests: How farmers manage forest resources

Local people in Southeast Asia are often cited as skilled forest managers. Yet, it is barely acknowledged that an essential part of this forest management occurs outside natural forests.

'Domesticating Forests: How farmers manage forest resources' focuses on forest cultivation by small-holder farmers in Southeast Asia. According to the authors, it could make invaluable contributions to the design of alternative strategies for the management of forest resources and forest lands.

Drawing on 10 years of multidis-

ciplinary research and analysis of indigenous forest culture by various institutions, including the World

Bank, the authors explain why it is important to consider these examples as interesting alternative models to either forest extraction or specialized forest plantations, especially in the present context of depletion of natural forests all over the planet.

The book shows how forest culture by farmers challenges the practical, conceptual and legal aspects of conventional forest management.

Agroforestry Centre (ICRAF), the book shows how forest culture by farmers challenges the practical, conceptual and legal aspects of conventional forest management.

The authors advocate for increased scientific and political support to these systems, because they are altogether neglected and endangered, yet full of potential. They also ex-



New Publications

Books.

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