



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Forestry in Agriculture: The Vision of Landcare

Dennis Garrity

Paper prepared for presentation at the “Forests, Wood And Livelihoods: Finding A Future For All” conference conducted by the Crawford Fund for International Agricultural Research, Parliament House, Canberra, Australia, 16 August 2005

Copyright 2005 by Dennis Garrity. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.



**SESSION: MEETING THE DEMAND FOR
FORESTS AND FOREST PRODUCTS TO 2020:
ISSUES FOR DEVELOPMENT AND AUSTRALIA**

Forestry in Agriculture: The Vision of Landcare

DENNIS GARRITY

World Agroforestry Centre (ICRAF)
PO Box 30677-00100, Nairobi, Kenya
Email: d.garrity@cgiar.org

Australia is a vast, dry continent that faces huge challenges in reversing its land degradation processes to achieve a sustainable future. Many of these challenges are similar to those in much of the developing world. Australia is forthrightly tackling them with innovative solutions, and has become a global leader in the science and practice of agroforestry: the integration of trees into farming landscapes to enhance farm productivity, protect the environment and revitalise farming communities. Many of the greatest environmental problems (soil erosion, salinisation, declining soil productivity, fire, biodiversity loss) turn out to be a commercial opportunity when a farmer considers agroforestry in addressing them. Australia is fortunate in having developed a dynamic economy that can afford to invest in land regeneration. Unfortunately, most developing countries are too poor to do the same. Australia's advances in agroforestry enable it to contribute to achieving the end of desperate pov-

erty and regenerating the natural resource base in the developing world. Already it has contributed many productive tree species, such as the eucalypts and grevillea, to smallholder agroforestry around the world. These have made remarkable contributions in countries such as Ethiopia and Rwanda, among many others. Likewise, Australia's renowned model for community action to address land degradation — Landcare — is taking root in the developing world and spreading rapidly. Already, the Philippines, South Africa and Uganda have evolved vibrant Landcare movements; and many other countries are enthusiastically exploring it. These successes have spawned Landcare International, a new global association that supports worldwide efforts to advance the Landcare agenda. Australia has great comparative advantages in extending its scientific and institutional experience in advancing agroforestry and Landcare in the developing world. It would do well to focus more of its international aid investment in this area in order to capitalise on these natural advantages.

DR DENNIS P. GARRITY has been Director General of the World Agroforestry Centre (ICRAF) based in Nairobi, Kenya, since 2001. The Centre's mission is to advance the science and practice of agroforestry throughout the developing world in order to foster a smallholder tree revolution to help overcome hunger and poverty, and create a sustainable environment. He is also Chair of the CGIAR Inter-Centre Working Group on Climate Change. From 1992 to 2002 he coordinated the ICRAF Southeast Asia Programme, based in Bogor, Indonesia. He created the regional programme, and led research to develop and evaluate agroforestry alternatives to slash-and-burn agriculture. He worked extensively on conservation-oriented agroforestry systems for sloping uplands. He has been active in the development of farmer-led organisations in sustainable agriculture and natural resource management. Dr Garrity has a BSc from Ohio State University, an MSc in agronomy from the University of the Philippines and a PhD in crop physiology from the University of Nebraska.

Introduction

As we move forward into the 21st century, we have got to rethink the way we use the land, water and biodiversity that support us, and evolve much better means to protect and regenerate them if we are to have any hope of supporting the growing populations of the developing world. The world's farming systems will need to provide twice as much food and fibre by the year 2030 as they do today, and there must be a more equitable distribution of food. Yet, all over the world, farmers are under financial and social stress. With inadequate technologies, farming has accelerated the depletion and degradation of natural resources. The recent Millennium Ecosystem Assessment (Anon. 2005) has emphasised clearly just how rapidly these natural resources are now in decline.

Agroforestry and achieving the Millennium Development Goals

Achieving the Millennium Development Goals (MDGs) (United Nations 2000) will require an attack on hunger and poverty in new ways that are much more thorough, comprehensive and holistic. The World Bank estimates that 1.2 billion people depend to some extent on trees and forests.

Trees play a crucial role in almost all terrestrial systems and provide a wide range of products and services to rural and urban people. As natural vegetation is cleared for agriculture and other types of development, the benefits that trees provide are sustained by integrating them into agriculturally-productive landscapes. Agroforestry focuses on a wide range of working trees. Among these are fertiliser trees for land and soil fertility regeneration and food security; fruit trees for nutrition and income; fodder trees that improve smallholder livestock production; timber and fuel trees for shelter and energy; medicinal trees to combat disease; and trees that provide important commodities for the world market such as rubber, coffee, cocoa and resins.

Many of these trees are actually multipurpose, each providing a range of benefits. Trees play a particularly pivotal role where people depend on fragile ecosystems for survival and sustenance. Thus, agroforestry is a dynamic, ecologically based, natural resource management system that, through the integration of trees on farms in an agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits.

Over the past 30 years, agroforestry has progressed from a traditional practice to the point where it now provides science-based pathways to achieve better natural resource management and poverty alleviation. Although smallholder farm families practice agroforestry widely, awareness is inadequate about its potential ability to benefit people trapped in poverty. To achieve the Millennium Development Goals, a global transformation will be needed that mobilises resources and removes socio-economic, ecological and policy constraints and leads to widespread adoption of agroforestry.

The challenges of reversing land degradation on a dry continent

Ecologically, the Australian environment is exceptionally fragile, the most fragile of any first-world country. Thus, Australia gives us a foretaste of problems that actually will arise elsewhere if present trends continue. Australia has a well-educated populace, a high standard of living, and relatively honest political and economic institutions by world standards. Hence, Australia's environmental problems cannot be dismissed as products of ecological mismanagement by an uneducated, desperately impoverished populace and grossly corrupt government and businesses, justifications that are often employed to explain away environmental problems in developing countries.

People have had massive impacts on the Australian environment. Climate change is exacerbating those impacts today. Perhaps more than in any other first-world country, Australians are beginning to think radically about their traditional core values on land management, and questioning which ones no longer serve them well in the world of today. Three features of the Australian environment are particularly important: Australian soils, especially their low fertility; the uncertainty of rainfall and low availability of fresh-water resources; and the distances both within Australia and between Australia and its overseas trading partners.

Land regeneration through agroforestry in Australia

Never before has there been such widespread support for the establishment of trees on Australian farms to address the threats posed to farm productivity, water quality and the environment. In many parts of Australia, farmers favor the integration of multipurpose plantations into their existing farming landscapes in a way that enhances farm productivity, protects the natural environment and revitalises farming communities.

From the wheat belt of Western Australia to the tropical coast of northern Queensland, farmer groups, supported by governments, industry professionals and conservationists, have sprung up in support of commercial agroforestry and farm forestry.

Agroforestry spawns diversity. This is because it is unlikely that a single farm forestry option is suitable to many farmers. Thus, agroforestry is likely

to increase, rather than reduce, the diversity and resilience of agricultural landscapes. Appropriate diversity can ensure that farmers and their communities are not susceptible to fluctuating markets and policy changes. The key is for farmers to design their farm forests for a range of benefits. The incentives and land use policy changes proposed by single-interest groups actually discourage multipurpose solutions. These interest groups must first ensure that farmers are able to achieve their own goals. Farmers will judge their satisfaction with the total package of financial, environmental and social benefits that they are able to capture or expect relative to their investment. The Joint Venture Agroforestry Program has shown how research and development can be focused on gaining an understanding of the underlying processes, and identifying the principles of farm forestry design, while still allowing farmers to make the final decision as to the most appropriate course of action.

The Australian Master Tree Grower program, initiated and conducted by the Department of Forestry at the University of Melbourne, is a sterling example of a successful effort to provide education and support to farmers to develop and manage trees on their farms for commercial and noncommercial reasons (Reid and Stephen 2001). Nearly a thousand farmers across Australia have participated in this program. In turn, they have shared their experiences with thousands of others. Were it only possible to share that experience with thousands of farmers in the developing countries, who likewise seek the advantages of agroforestry in regenerating their farms and livelihoods, the benefits could be enormous.

The agroforestry transformation

With increasing pressures on natural forests, wood fibre supply is undergoing the same kind of transition from gathering to cultivation that began in the case of the annual crops and high-value perennials 10 000 years ago. This trend is reflected in the expansion of agroforestry, which has been spreading rapidly on small farms throughout the tropics.

Historically, agroforestry developed most where rising population densities increased local subsistence and market demand for forest products and services (Templeton and Scherr c. 2000). During the past 30 years, agroforestry has expanded in much of the developing world due to forest scar-

city, the increasing price of timber relative to food grains, and the expansion of farming on lands that are more marginal for annual crop production.

In forest-scarce countries like Bangladesh, farms account for a dominant share of commercial forest production. On the China plains, farm trees supply 30% of industrial roundwood. Globally, tree crop plantations account for about 10% of all agricultural land use (Scherr *et al.* 2004). In Thailand and Vietnam, there are fifteen times more trees on farms than in enforced plantations. In Latin America, Africa, South and Southeast Asia the majority of agricultural lands have over 10% tree cover, and over a quarter of such lands have more than 30% tree cover (Wood *et al.* 2000). Suitably-designed agroforestry systems can in addition provide environmental benefits such as watershed protection, wind protection and soil improvement. In China's northern plains, for example, large-scale planting of intercrops and shelter belts may have raised agricultural productivity by 10%.

Landcare as a model for community action to address land degradation

This paper proposes that Australia can contribute in unique ways to helping the developing countries — in its neighbourhood and throughout the tropical world — to tackle land degradation and achieve the Millennium Development Goals. Australia has singular experience and important scientific research that can make tremendous contributions to the solution of these problems. One of the contributions of great pride to Australians is the contribution of its most productive indigenous tree species to the farming systems of the developing world. Already, in Southeast Asia and throughout many countries in Africa, the Australian eucalypts, acacias, casuarinas and grevilleas are integral parts of the farming systems. On farms that are often as small as one-half hectare to one hectare in size, these tree species are grown in timber and wood tree gardens. This is an under-recognised contribution of Australia's tree germ plasm to the livelihoods of millions of people in the developing world.

Likewise, Australia is renowned for community action to address land degradation. The unique model of Landcare has been a great source of pride and accomplishment. Within Australia, Landcare has become a national movement. It has demon-

strated how local communities, particularly rural communities, can tackle their problems in partnership with government and conservation organisations. It has grown to involve about one out of every three farm households in Australia.

Landcare is truly an effective Australian brand for community-based approaches to natural resource management. The movement resonates not only here but throughout other parts of the world. It is now taking root in the developing world and spreading rapidly.

Good governance is key to human and economic development, and Landcare enhances the global trend toward greater decentralisation and devolution of power in the developing world. It enhances democracy and good governance on the ground for the benefit of the rural poor, particularly those in more remote and disempowered areas.

The Landcare Program in the Philippines is an example. Landcare in the Philippines was not a spin-off of the Australian Landcare program. It developed independently. But soon after its establishment, it made a bridge to the Australian Landcare Program with the assistance of the Australian Centre for International Agricultural Research (ACIAR). Landcare is now a vital part of future sustainability directions in that country. Currently, the movement is spreading throughout Mindanao and the Visayan Islands (Fig. 1), and is accelerating in terms of its impact. More than 600 village-based self-governing Landcare groups are now operating, and, through their local Landcare groups, more than 8000 families have adopted soil conservation technologies that are suitable to their land. Over 300 communal and individual tree nurseries are now in business in connection with Landcare. As a result, millions of seedlings of fruit and timber trees have been planted by farmers on their farms in the sloping uplands. Thus, we see an acceleration of both the development of the membership of Landcare groups and impact on the ground in changing landscapes. The transformation of landscapes in the areas where Landcare has been active in the last 10 years is dramatic.

Landcare has also taken root in Africa. We now observe vibrant Landcare Programs in both South Africa and in Uganda. One example of community-based approaches that has had real impact on a large scale is the experience of the Ngitili system, which is a community-based regeneration of a total desertified environment in north-western Tanzania.

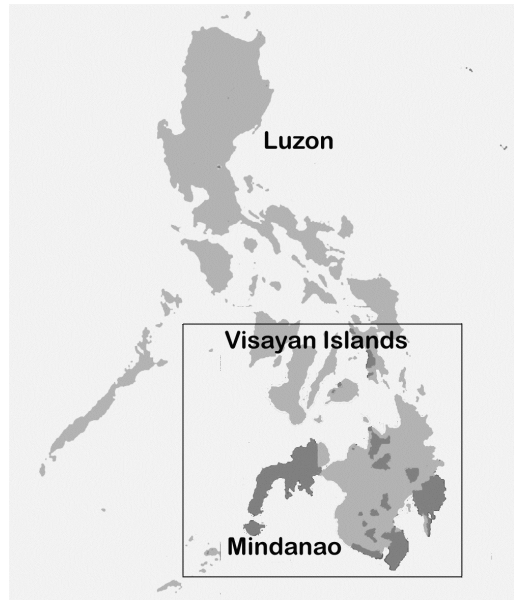


Figure 1. Landcare sites in the Philippines are indicated by the darker shading

Through the community action of 835 villages over the last 8 years, over 350 000 ha of land had been regenerated into thriving acacia woodlands for abundant grazing, timber and other products. These programs take on different manifestations and different styles of development in different countries, but the general principles and practices of Landcare are nevertheless clearly the same.

The World Bank published a book a few years ago in which their researchers asked the question of thousands of poor individuals around the world. *'What is it that you think might make the greatest difference in your lives?'* The answer: *'Organisations of our own, so that we may negotiate with government, with traders and with non-government organisations and direct assistance through community driven programs, so that we may shape our own destiny'* (Narayan 2000). That is spirit of Landcare.

A universal aspect of Landcare is voluntary community-based groups that identify their own problems, set up their own strategies, mobilise internal and external resources, and influence policy. In the developing countries this manifestation is particularly strong in connection with the service providers: the research and extension institutions that have largely ignored disempowered smallholders. Landcare groups focus on land regeneration and natural resource management issues, livelihood

issues and conservation issues. Landcare's guiding values around the world are those that are recognised in Australia: partnerships, voluntary participation, local ownership, grassroots leadership, flexibility and inclusiveness — and being non-political and non-partisan.

Many of the Landcare movements that we observe are particularly interested in the intensification and diversification of small-scale farming systems: choosing tree commodities, livestock commodities and crop commodities that can be combined and synergised with market linkages and better investment. This is where agroforestry research has had a major role to play.

Landcare International

Currently, Landcare programs are operating in at least six countries around the world: New Zealand, Philippines, South Africa, Uganda, the United States and of course Australia. A number of other countries are currently exploring how they might go about developing a Landcare approach under their own circumstances. This provides a sound basis for cooperation to stimulate international Landcare.

In September 2004, at the Capetown Landcare conference, a group of about 20 Landcare practitioners from around the world got together and declared that it was time for energies to be focused in a more formal way to support Landcare and its development globally. This group became the force behind Landcare International, an association that is evolving to support research and development of Landcare around the world. Landcare International aims to champion Landcare and raise its global visibility, and build a supportive global network that draws together these initiatives and to learn from them.

What has been accomplished so far? The interim steering committee, composed of 16 prominent Landcare proponents from 10 countries, is now working to build the global alliance. The Department of Agriculture, Fisheries and Forestry in Australia is supporting this effort and has set up the International Landcare Clearing House to help fill the information gap. Landcare International is now a thriving organisation. It is seeking to mobilise support for this world-wide network, remaining concerned about including a broad-based group of stakeholders that range from local communities to the private sector, the corporate sector,

the agricultural research and extension organisations, the NGOs and many others.

What is most needed to pave the way forward? Capacity-building support for Landcare efforts in developing countries is priority number one. This involves building exposure to Landcare, and deepening the skills of Landcare facilitators to expand the organisational opportunities. Landcare International is reaching out vigorously to network with the many other grassroots farmers' and community efforts that exist in the developing world. In many cases, Landcare is actually a web of connections between already-existing grassroots organisations, like women's groups and NGOs. Research on Landcare in its international context is critical. The body of this research is growing, and may now exceed the amount of research being done on Landcare within Australia itself.

The vision of the World Agroforestry Centre is a smallholder agroforestry revolution in the developing world, manifested through a massive increase in the use of working trees on working landscapes by world households. Thus, there is a clear fit between the Centre's mission and that of Landcare International. It is a fit that we support quite strongly.

Conclusion

Australia faces huge challenges in reversing its land degradation processes to achieve a sustainable future. Many of these challenges are similar to those in much of the developing world. Australia is forthrightly tackling them with innovative solutions, and has become a global leader in the science and practice of agroforestry: the integration of trees into farming landscapes to enhance farm productivity, protect the environment and revitalise farming communities. Australia's advances in agroforestry enable it to contribute to achieving the end of desperate poverty and regenerating the natural resource base in the developing world. Already it has contributed many productive tree species to smallholder agroforestry around the world. These have made remarkable contributions in many developing countries.

Likewise, Australia's renowned model for community action to address land degradation — Landcare — is taking root in the developing world and spreading rapidly. Already, the Philippines, South Africa and Uganda have evolved vibrant Landcare movements, and many other countries

are enthusiastically exploring it. These successes have spawned Landcare International, a new global association that supports worldwide efforts to advance the Landcare agenda.

It is important to emphasise that Australia has some unique advantages in extending its scientific and institutional experience in advancing both agroforestry and Landcare in the developing world. Australia is therefore encouraged to focus more of its international aid investment in these areas, and thus capitalise on these natural collaborative advantages.

References

- Anon. 2005. *Millennium Ecosystem Assessment*. www.millenniumassessment.org/en/About.Overview.aspx
- Narayan, D. 2000. *Voice of the Poor: Can Anyone Hear Us?* Oxford University Press, New York, 343 pp.
- Reid, R. and Stephen, P. 2001. *The Farmer's Forest: Multipurpose Forestry for Australian Farmers*. Rural Industries Research and Development Corporation Publication Number R01/33. 167 pp.
- Scherr, S., White, A. and Kaimowitz, D. 2004. *A New Agenda for Forest Conservation and Poverty Reduction*. Forest Trends, Washington DC, 160 pp.
- Templeton, S. and Scherr, S.J. c. 2000. Impacts of population increase and economic change on mountain forests in developing countries. In: Price, M. and Butt, N. (eds) *Forests in Sustainable Mountain Development: A State of Knowledge Report for 2000*. IUFRO Research Series No. 5, CABI Publishing, Wallingford, UK, 590 pp.
- United Nations 2000. United Nations Millennium Declaration. General Assembly Resolution 55/2, September 2000. www.un.org/millennium/declaration/ares552e.htm
- Wood, S., Sebastian, K. and Scherr, S.J. 2000. *Agroecosystems: Global Analysis of Pilot Ecosystems*. International Food Policy Research Institute and World Resources Institute, Washington DC, 110 pp.