ICRAF presents 20 years of research on trees and water

Ever increasing water scarcity across the world has triggered a heated debate: Does planting trees ease or worsen water shortages?

Last year, an article in the *Economist*, quoting research from the University of Newcastle, in Britain, and Free University in Amsterdam, argued that planting trees can exacerbate droughts.

Scientists at the World Agroforestry Centre claim that this is only one side of the story. “Trees are not bad, but it has to be the right tree in the right place,” says Prof. Chin Ong, principal scientist at ICRAF.

The Centre’s studies show that integrating trees into agricultural systems can increase the efficiency of water use, while plantations of fast-growing evergreen trees can worsen water shortages. These findings, based on 20 years of research by ICRAF in the Kenyan drylands, are part of a new policy series on the role of trees in watershed management.

**Decline in rainfall**

The researchers make a number of recommendations on how the water use of trees can be optimized and outline ways to minimize competition with crops.

Plantations of fast-growing evergreen trees, such as *Eucalyptus* or pines that consume a lot of water, should be avoided in water-scarce areas. As an alternative, scientists suggest planting deciduous trees, which shed their leaves during the dry season. In addition to consuming less water, these trees can produce a range of valuable products like timber, fruits and fodder.

Scientists also address the problem of competition for water between crops and trees. Field studies have shown that coppicing and root pruning reduces the water requirements of trees and gives crops an added advantage.

These are important lessons for the future, the scientists say, when the effects of climate change and expected decline in rainfall will make the water balance effects of trees critical to the management of agricultural landscapes across Africa.

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ICRAF receives award in Mali
ICRAF has received an award for its successful collaboration with the National Agricultural Research System (NARs) of Mali. The prize was presented by the National Research Institute of Mali (IER) during the Agricultural Research Week, held from 5 to 9 June in Bamako.

Young Professionals’ platform for Agricultural research for Development (YPARD)
A new association is being formed to give voice to professionals under the age of 40 to share information and engage in policy debates on issues such as research priorities and genetic engineering. The association will be formally launched in November 2006 during the Global Forum on Agricultural Research in New Delhi, India.

Rejuvenating the Sahelian Parklands
Life is difficult in the dry and infertile Sahel. One of the secrets of the inhabitants’ survival are the Parklands: trees scattered across their cropland that provide fruits, fodder, fuelwood and other essential products. However, this indigenous agroforestry system is under threat of unsustainable land use. “If the Parklands disappear, the desert will follow,” says Amadou Niang, former head of the World Agroforestry Centre programme in the Sahel. ICRAF is working to rejuvenate the Parklands system through a number of agroforestry innovations. In this issue we will look at innovative tree technologies introduced in the Sahel.

Fodder banks and live fences
ICRAF researchers are working with farmers to plant fodder banks of nutrient-rich tree species. These trees provide fodder for livestock in the dry-season and alleviate pressure on the Parklands. The fodder banks are protected by so-called ‘live fences’, tree species that have the added advantage of producing marketable fruits such as jujube (Ziziphus mauritiana) or the popular skin and hair dye, henna (Lawsonia inermis).

Boosting shea butter export
Shea butter – made from the nut of the tree (Vitellaria paradoxa) that grows in the Parklands – is rapidly becoming a valuable commodity in the global confectionary, cosmetic and pharmaceutical industries. ICRAF’s ProKarité project is working to improve the quality of locally produced shea butter to boost the export market.

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Improving indigenous fruit trees
In collaboration with farmers, ICRAF has improved 20 indigenous fruit tree species to mature faster and produce better quality fruit. Planting of these trees, such as grafted Ziziphus mauritiana, helps to rehabilitate the degraded Parklands and provides healthy fruit and income for the local population.

Agroforestry in the drylands series
The United Nations has declared 2006 the International Year of Deserts and Desertification. Agroforestry – trees on farms – can play an important role in turning arid areas into productive agricultural landscapes, providing food and income to rural communities. This is the second story in a series in which we look at innovative agroforestry applications that ICRAF scientists have studied in some of the most arid areas on our planet.

YPARD will encourage professionals under the age of 40 to share information and engage in policy debates on issues such as research priorities and genetic engineering. The association will be formally launched in November 2006 during the Global Forum on Agricultural Research in New Delhi, India.

1st Africa herbal anti-malaria meeting
Control of malaria has relied on herbal drugs for centuries. In March, ICRAF organized the first Africa herbal anti-malaria meeting in Nairobi. Participants shared information on the use of plant products in the control of malaria and discussed an Africa-wide production programme. The meeting was co-hosted by the Association for the Promotion of Traditional Medicine (PROMETRA) and the Centre for the Development of Enterprise (CDE).

ICRAF has improved 20 indigenous fruit tree species to mature faster and produce better quality fruit.

News

ICRAF-Peru course on smallholder timber plantations
ICRAF-Peru hosted an international course on smallholder timber production for the Amazon from 6–10 June in Pucallpa. Local foresters and agronomists were trained in site and species selection, germplasm production, plantation establishment and tending. The course was based on a new training series ‘Agroforestry for the Peruvian Amazon’, designed by ICRAF.

I-CRF scientist Julio Ugarta lifts a log of the fast growing Amazon timber species Boleina.
Improving livelihoods in the African highlands
22 new African Highlands Initiative working papers

The African highlands initiative (AHI) aims to improve livelihoods and reverse natural resource degradation in the intensively cultivated highlands of eastern Africa. The programme develops integrated natural resource management approaches in collaboration with local partners in Uganda, Tanzania, Ethiopia, Kenya and Madagascar.

Recently, AHI published a set of 22 new working papers synthesizing best practices from pilot sites. This series moves beyond earlier publications on research trials to focus on key areas of methodological innovation:

**Strategies for systems intensification**
These papers focus on research and intervention strategies for the intensification and optimization of agricultural systems, with emphasis on the farm level.

**Institutional innovations for agricultural R&D**
This series of papers emphasizes institutional innovations within National Agricultural Research Institutes (NARIs) and in the development strategies used to support local districts and communities.

**Integrated Watershed Management**
These publications focus on the participatory watershed management approach under development within the African Highlands Initiative.

**Strengthening Local Institutions**
These documents summarize experiences in working with local institutions to improve livelihoods and natural resource management.

AHI plans to share these lessons and approaches through a series of regional trainings and applied research on institutional change.

The African Highlands Initiative is a CGIAR programme, hosted by the World Agroforestry Centre and collaboratively managed with the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA).

The Working papers can be downloaded from the new AHI website: www.africanhighlands.org

For more details and to order hardcopies or CDs of the working papers, please contact Laura German (l.german@cgiar.org)

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**New Publications**


**Luhende R., Nyadzi, G., Malimwbi, R.E. 2006.** Comparison of wood basic density and basal area of 5-year-old *Acacia cornicarpa*, *A. juliflora*, *A. leptoacarpa*, *Leucaena pallida* and *Senna siamea* in rotational woodlots trials in western Tabora, Tanzania. *Improvement and Culture of Nitrogen Fixing Trees* 9(1): 5-6.


* World Agroforestry Centre staff are shown in bold.