

## INTERNATIONAL CENTER FOR RESEARCH IN AGROFORESTRY (ICRAF) ACTIVITIES RELATED TO NON- WOOD FORESTS PRODUCTS RESEARCH AND DEVELOPMENT

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The International Center for Research in Agroforestry (ICRAF) was established in 1977 as a research council. In 1991, it became a research center supported by the Consultative Group on International Agricultural Research. ICRAF's goal is to help mitigate tropical deforestation, land depletion and rural poverty, through improved agroforestry systems.

ICRAF, which undertakes activities in 20 countries in Africa, Latin America and Southeast Asia, has the following objectives:

- to conduct strategic and applied research, aimed at developing appropriate agroforestry technologies for more sustainable and productive land use
- to strengthen national capacities to conduct agroforestry research
- to encourage inter-institutional collaboration
- to promote training, education, documentation and communication in the field of agroforestry.

ICRAF has had a long-standing interest in tree products, some of which are of forest origin. However, from 1977 to 1992, the bulk of ICRAF's activities were concentrated in Africa, especially in the dry

lands of Eastern Africa where ICRAF is based. Previously ICRAF focused primarily on agricultural areas. Its main efforts were to improve existing agricultural systems and to solve some of the problems encountered by local farmers through selected agroforestry technologies. ICRAF considered trees primarily for purposes of boundary or contour-planting, as shade trees in pasture lands, as living hedges and as nitrogen-fixing enhancers to food crops.

In 1992, ICRAF launched a program for Southeast Asia. As ICRAF began work in Southeast Asia, the organization realized that there is an astonishing variety of agroforestry systems in the region and that a great many of them are more closely related to forests than to agriculture. Thus, ICRAF refocused its research in Southeast Asia toward forestry-oriented agroforestry.

In Southeast Asia, ICRAF decided to focus on three target ecosystems: forest margins, *Imperata* grasslands and hilly farmlands. For each ecosystem, ICRAF has formulated an agroforestry system hypothesis to guide research. For the forest margin ecosystem, the hypothesis is: "On the forest margins, complex agroforestry systems or agroforests provide a superior alternative for the small-scale farmer for either continuous food crop systems ~~or monoculture~~ ~~plantation~~ of perennials."

These two models, continuous food cropping or monoculture plantation are usually devised to replace degraded forests or to replace unsustainable "slash-and-burn" farming. These two systems have shown important technical and social weakness. Agroforests, on the other hand offer a complement to other types of production units such as permanent production of staples or unsustainable slash-and-burn practices.

Thus, agroforestry increases production sustainability of the whole farming system. Agroforests increase biodiversity, decrease risks and increase returns to labour. Thus ICRAF still considers agroforests from the angle of agricultural development but agroforests should also be treated under a more forest-oriented perspective which involves non-wood forest products (NWFPs).

As far as NWFP management is concerned, there are clearly two options. One option is to harvest from natural forests, and the second option is to domesticate and establish plantations. Harvesting natural stocks is sustainable as long as the level of extracted matter does not exceed the level of natural regeneration. But pressure on resources is likely to increase. Establishing plantations might save one or two resources, but rarely does it save the ecosystem. Plantation establishment also usually implies a shift in control of the resource. Who owns, who uses, who benefits from NWFP plantations? It is usually not the communities which previously harvested the same NWFPs from natural forests. And usually it is not farmers, but companies.

Extension of plantations of NWFPs often results in the dispossession of local communities from forest resources. Here again, the agroforestry model appears as an

interesting alternative because it secures conservation of the coveted resource but also results in restitution of the resource base and maintains the authority of local communities.

ICRAF is now establishing a program in collaboration with the newly-created Center for International Forestry Research (CIFOR), which is also based in Indonesia. This program aims at a global comparison of the three options for NWFP management — harvesting from natural stocks, plantation development and agroforestry. ICRAF will focus on strategies, not on products or on systems.

NWFP exploitation involves more than simply choosing between extraction from natural forests or development of plantations or agroforestry systems. It also means choosing between sustainable harvest or immediate profits; between multiple use or specialization; between predominant use of natural forests or occasional use; and between subsistence or commercial exploitation of resources.

ICRAF wants to determine what influences the choice of a particular strategy in a given community. How does each recognized determining factor act in the decision-making processes of communities? Among these factors is product availability, regeneration and growth potential, site preferences, production processes, marketing prospects, etc.

Tenure systems are especially important. Ownership of land and resources, access to resources, and ability to transfer and access rights significantly affect NWFP management decisions.

Market organization patterns, at both local and international levels, are being

considered by ICRAF along with the organization of production systems. One question is how NWFP management relates to management of food cropping systems and commercial agricultural practices.

Technological aspects are considered along with cognitive systems. The latter include perception of the environment and responses to changes in resource availability. Local institutions and the social environment are other considerations. Who makes decisions — individuals, or the community as a whole? What are the important social structures for the evolution (or non-evolution) of resource management systems? The impact of external projects (e.g., logging, transmigration, etc.) is another consideration. How do these effect the traditional resource use patterns of a community? Also to be considered are relations with local, central and governmental institutions.

ICRAF will combine two types of approaches in its NWFP research. One is the site-specific approach which compares locations. Locations will be chosen to encompass a wide range of socio-economic situations, as well as different strategies for

NWFP management. The second type of approach is a product-oriented approach. ICRAF will compare different management strategies applied for various NWFPs. Using these combined approaches, ICRAF will try to answer the following three questions:

- Under what conditions does agroforestry emerge as a desirable and achievable strategy for NWFP development?
2. What are the advantages and disadvantages of agroforestry systems for NWFP development relative to extraction of NWFPs from natural forests or development of NWFP plantations?
3. What can agroforestry strategies provide in terms of positive changes and benefits for local communities (e.g., what are the prospects for empowering local communities for forest resource management)?

ICRAF looks forward to working with scientists throughout the region in searching for answers to these questions.