



International Workshop on Tropical Agriculture Development

Workshop on Tropical Agriculture Development
July 17-19, 2006
Quality Hotel & Suites Lakeside
Brasília, Brazil

**Transforming Tropical Agriculture:
An Assessment of Major Technological,
Institutional, and Policy Innovations**

**Transformando a Agricultura Tropical:
Uma Avaliação de Inovações Tecnológicas,
Institucionais e Políticas**

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Improving Natural Resources Management: Sustainable Forest Management

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Sound natural resources management is a key element for sustainable development. Forestry is of great importance in Brazil, which holds the second largest forest area in the world, distributed in several biomes. Together those biomes with huge diversity of life forms turn Brazil into one of the greatest areas of biodiversity on Earth. Research on Sustainable Forest Management is complex and relatively new and, regardless in the last three decades several technical advances were accomplished, still has much to go. Forestry research at Embrapa began in 1978 with the establishment of four research teams located in the Centre-South, Cerrados, Semi-arid and Humid Tropics Research Centres, inheriting almost all the experimental studies of the Brazilian Federal Government at that time. The management of natural forests in Brazil, focused on the Amazon Region, can be understood following cornerstones: Late 70's– First experiment involving “planned logging” in Curuá-Una Station, SUDAM-FAO; 1986– First ordinance for Forest Management Plans; 1992– Regulation of the 15th article of the Brazilian Forest Code, specifying silvicultural treatments; 1997- Change in the proportion of legal forest reserve increasing from 50% to 80%, of the total area of the Amazonian properties; 2006– Sanctioned Law No. 11,284 (March 2, 2006) regarding Public

Forest Management which establishes the rules and conditions for forest concessions avoiding deforestation and land tenure dispute. This law creates also the Brazilian Forest Service, which is a important step towards placing forest issues in the central theme of sustainable development. This new Brazilian forest legislation is considered both by government and the majority of the environmental sector as a powerful instrument for fighting Brazil's forest destruction reality. Simultaneously to these policies, research efforts were looking for answers towards guarantee sustainability to forest management such as: studies on forest harvesting planning, skidding operations and development of technical indices to monitoring forest production. Silvicultural studies (natural regeneration conduction, basal area reduction, lianas cutting) were also conducted. Studies on the impact logging on seedling regeneration, reproductive biology, animal populations and genetic diversity of the remaining tree populations are underway as well as a great effort to improve tree species' taxonomy. However, despite all efforts towards forest management these activities were restricted to huge forest areas, demanding high investments. Therefore, a system adapted for the local groups as small farmers needed to be developed. Technologies adapted to animal traction timber extraction, low intensities volume, and shorter cycles were tested. The system, implemented in 1995, is now completing its first cutting cycle and is adopted as a public police in the Acre State. The original forest cover of other Brazilian biomes such as Atlantic Forest was reduced critically in the last 100 years, ending the original vegetation continuity and causing major environmental changes. The development process played a major role in shaping Southern Brazil landscape and caused a very extreme level of fragmentation on the native forest cover. After many regulatory acts, the current picture is that in order to cut any piece of forest, landowners need to obtain permission from the State Environmental Agency. However, law enforcement is difficult. The forest fragments – even being small - are still numerous and are scattered over a large area. The Government is not equipped to detect all small damages, like plowing the edges of forest fragments. Considering this panorama, a Pilot Project involving the concept of sustainable management by a "transformation silvicultural system", which combines induced and natural regeneration methods with selective cuttings, is being developed. The difficulties of such a context are recognized, but some areas are so fitossociologically poor that this is the only way to foresee a sustainable forest use. Given the high level of forest biodiversity associated with the challenge of making forest management more competitive compared to other land use systems, several ongoing initiatives are in place evaluating forests non-timber products. Among these products are seeds, barks, lianas, essential oils and animal products. One important tool to study forest dynamics and development is the monitoring of Permanent Sample Plots, in order to generate growth indices, ingrowths, and mortality rates. Thus, Embrapa has been monitoring the response of different types of forests subjected to different management systems. More recently a network system has been implemented to organize and make available the results from permanent sample plots established by different research institutions and forest private enterprises. Researchers of different fields of science should seek for a more effective integration in order to understand the complexity of this dynamics processes as well as the potential benefits offered by the forests. Besides technical and scientific papers published in specialized journals and bulletins, a whole set of non-technical publications is being produced, such as manuals, folders, children books, including one in "braille" language, to outreach the great public and society as whole. . Science based communication strategy to raise public awareness and an effective dialogue with policy makers is of great importance to improve the forest use conservation resources. It is imperative that Natural Forest Management is seen for its multiple values and benefits for the local population as well as for the environmental conservation. Actions involving forest and industry sector, policy makers, research and training institutes as well as the society at large is a mandatory process towards sustainable development, where forests can play a very distinguishable role in it.



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