

# CONVERSION OF TROPICAL FOREST TO PASTURE IN LATIN AMERICA

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## INTRODUCTION

A major workshop concerning the impacts of tropical forest conversion to pastures in Latin America was conducted in Oaxaca, Mexico, October 4-7, 1988, by the U.S. Man and the Biosphere Program (MAB). The workshop described the current situation and history, reviewed the economic, environmental, and social impacts and dynamics of deforestation, discussed production alternatives and development perspectives, and identified research, technological, and policy options and priorities. The purpose of this paper is to summarize results and recommendations of the Oaxaca workshop and emphasize its significance at the XVI International Grassland Congress.

## THE OAXACA WORKSHOP

In October 1988, the first technical workshop on the « Conversion of Tropical Forest to Pasture in Latin America » was held in Oaxaca, Mexico, with 66 scientists, technicians, environmentalists, writers, administrators, and peasants attending which represented 10 countries. The workshop brought together heterogeneous and diverse communities which were multi-disciplinary, multi-representative, multi-interest, and multi-view.

During the workshop, experts in tropical forestry examined the Latin American situation from the approaches: 1) Economic, Environmental, and Social Impacts, 2) Production Alternatives and Development Perspectives, and 3) Recommendations. A published proceedings of the workshop is forthcoming; recommendations summarized in this paper were synthesized by four work groups during the workshop.

## ECONOMIC, ENVIRONMENTAL, AND SOCIAL IMPACTS

Major issues identified during the workshop include forest genetic and other losses (Table 1) and soil, water, and climatic

Table 1. Tropical forest land conversion estimates (adapted from Lugo, 1988).

| FOREST LAND         | CLOSED FOREST |                       |             |                        | OPEN FOREST |                       |                  |                        |
|---------------------|---------------|-----------------------|-------------|------------------------|-------------|-----------------------|------------------|------------------------|
|                     | Total Area    | Annual Rate of Change | Area Logged | Area Fallow Unforested | Total Area  | Annual Rate of Change | Area Undisturbed | Area Fallow Unforested |
| Undisturbed forests | 985           | 4.4                   | 1.5         | 1.8                    | 734         | ---                   | 1.7              | 2.1                    |
| Logged forests      | 210           | ---                   | 1.9         | 2.3                    | 0           | ---                   | ---              | ---                    |
| Forest fallow       | 239           | ?                     | ---         | ?                      | 170         | ?                     | ---              | ?                      |

changes (Hecht, 1988). Pasture and livestock are considered more valuable than forests since they help in debt reductions and provide asset protection. Agricultural crops are high risks because of their long term, fluctuating markets, high labor requirements, and marketing difficulties. Technical assistance is inadequate and progress is hampered by poor training, lack of facilities, and commitment to forestry and enforcement plus an absence of conservation ethics (Lugo, 1988). Deforestation deteriorates quality of life and biological diversity (Table 2). During the last 10 years, the deforestation rate has greatly increased compared to the previous decades.

Table 2. Estimates for extinction of species in tropical forests (adapted from Lugo, 1988).

| Tropical Forest Area | Species present (thousands) | Projected deforestation (%) | Loss of species (%) | Extinctions (thousands) |
|----------------------|-----------------------------|-----------------------------|---------------------|-------------------------|
| Latin America        | 300-1,000                   | 17.1                        | 10.0                | 30-100                  |
| All tropics          | 750-2,500                   | 12.3                        | 8.8                 | 66-220                  |

Major causes of deforestation in the tropics include slash-and-burn agriculture and conversion of forest to pasture (Uhl, 1988). Deforestation and settlement are often accelerated by road building for oil and other developments (Wilson, 1988). The usual pattern following deforestation is cropland for 3 years, pasture for 7-10 years, and then abandonment for new lands; about 80 percent of the pastures during the past 30 years have been abandoned (Hecht, 1985). Often the real value of tropical forests accumulates outside the local area (Nations, 1988). However, the « rubber tappers » focused an ecological awareness of tropical forest values for their livelihood (Taylor, 1988).

During the workshop, local Oaxacan peasant community representatives requested input into the planning processes affecting them. The indigenous populations have existed for centuries, dealt with adversities, and felt they could provide help in solving their own problems in developing land use strategies.

## PRODUCTION ALTERNATIVES AND DEVELOPMENT PERSPECTIVES

Introduced forages (shrubs, grasses, legumes, etc.), management guidelines (grazing systems, timing and intensity of use, etc.), and integrated management (trees, crops, and livestock) provide production alternatives to sustain pastures and meet community resource and economic needs. Agroforestry, silvo-

pastoral, and other integrated production systems give additional multiple-use opportunities. These alternatives need technical criteria to evaluate the systems (production, stability, and human participation) and social, ecological, and economic discipline participation.

The success of projects in tropical America depends upon the sustainability and risk of investment. National policy also influences project direction and success. Debt retirements are usually rated more important by governments than environmental issues; however, the latter may become more significant in future political processes.

### RECOMMENDATIONS

Recommended urgent and long term planning actions synthesized during the symposium were: research, policy institutional role, and alternative approaches. The recommended *research* approach was to facilitate international, interdisciplinary, and multilingual projects with specific research components: 1) preparation of a series of current information synthesis papers, 2) research in basic biology, 3) research in applied forest production and pasture sustainability, and 4) development of methodology for whole system research.

*Policy* goals recommended include: 1) decreasing the access to tropical forest zones, 2) maintaining tropical forests and the biological and human cultural diversity, 3) promoting local participation in decision making, 4) promoting alternative sources of income that substitute for forest clearing, and 5) allocation of human and financial resources to better understand the ecosystem and encourage sustainable uses.

*Institutional role* goals recommended include: 1) recognizing indigenous and local community rights, 2) promoting direct financing of community development, 3) promoting local level organizations including community participation in programs and projects, 4) facilitating technology transfer and dissemination of information to the local level, 5) encouraging educational institutions to meet local needs, and 6) recognizing

and supporting sustainable forestry and livestock production businesses.

Recommended *alternative approaches* for production systems include: 1) introduction of new forages on cleared lands, 2) agroforestry and other integrated uses, and 3) developing appropriate management of existing resources. The alternative systems should encourage diversity, optimize low input technology, intensify management on existing pastures, and develop economical markets for natural forest products. Mechanisms for accomplishing these alternatives should include « ecological zoning », strong involvement of local and community organizations, and direct forms of technical assistance.

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