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**AGROECOSYSTEMS SUSTAINABILITY IN THE CARIBBEAN AND PACIFIC ISLANDS FINDINGS AND IMPLICATIONS OF A CBAG/PBAG WORKSHOP**

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**ABSTRACT.** The workshop addressed the sustainability of island agroecosystems in general and explored how information science and technology can enhance the biophysical, economic, and societal integrity of small island states. There was unanimous agreement that the ecosystems of many islands are in jeopardy and that this dilemma can be traced to three underlying causes: misguided value systems, flawed modes of thought, and dysfunctional institutions. New paradigms, strategies, and tactics need to be developed. The workshop participants therefore recommended, *inter alia*, the establishment of information exchange networks; the generation and harmonization of an improved data and knowledge base for applying systems technology; participatory approaches; human resource development and people empowerment; and new institutional and policy frameworks. A task force was constituted and charged with implementing the recommendations and donor agencies are currently being approached for funding of a workshop to draft a comprehensive project proposal. Detailed information is provided in the published workshop proceedings.

**RESUMEN.** El taller trató en términos generales de la sostenibilidad de los agroecosistemas isleños y exploró como la informática y la tecnología de computadora pueden acrecentar la integridad biofísica, económica y social de las pequeñas islas. Hubo acuerdo unánime en cuanto a que los ecosistemas de muchas de las pequeñas islas están en peligro y en que el origen de este dilema obedece a tres causas subyacentes: Sistemas de valores erróneos, modos defectuosos de pensar e instituciones que no funcionan. Es necesario desarrollar nuevos paradigmas, estrategias y tácticas. Se recomendó establecer redes de intercambio de información; generar y armonizar una base mejorada de datos y conocimientos para aplicar tecnología de sistemas; enfoques participatorios; desarrollo de recursos humanos; y nuevas estructuras institucionales y políticas. Se constituyó un grupo de trabajo con la encomienda de implantar las recomendaciones y se están haciendo acercamientos a agencias donantes a los fines de que provean fondos para un taller en el que se prepare una

propuesta abarcadora a tales efectos. En las memorias del taller, ya publicadas, se provee información detallada.

## INTRODUCTION

Sustainable development is an issue of global concern, but tropical islands have special and urgent needs for greater attention to economic and environmental health. Stagnant economics, growing populations, and fragile ecosystems constrain development of many of the Caribbean and Pacific islands. Yet, most of the small island nations lack the human and capital resources to generate the information needed by decision makers to formulate and implement sustainable practices and policies.

The Agroecosystems Sustainability in the Caribbean and Pacific Islands workshop, held in Orlando, Florida, from 16 to 19 October 1994, addressed these issues. Participants from both the Caribbean and Pacific Basins explored how information science and technology can enhance the performance of the agroecosystems of tropical islands and evaluated the new tools of information science to solve real-world problems related to sustainable development.

The Caribbean and Pacific Basin Administrative Groups (CBAG and PBAG) of the Tropical/Subtropical Agricultural Research (T-STAR) program jointly funded the workshop. T-STAR is composed of special grants administered by the Cooperative State Research, Extension and Education Service (CREES) of the United States Department of Agriculture. Cooperating land-grant institutions include the Universities of Florida, Puerto Rico, and the Virgin Islands in the Caribbean Basin and the Universities of Hawaii and Guam in the Pacific. The proceedings of the workshop have been published and may be requested from the author.

## WORKSHOP OBJECTIVES

The workshop had two major objectives:

1. To identify priority issues that affect the sustainability of the agroecosystems of tropical islands; and
2. To explore how information science and technology can be employed to help preserve the integrity of these agroecosystems and enhance their biological, economic, and societal performance.

## WORKSHOP STRUCTURE

Two keynote addresses focused on general aspects of agroecosystems sustainability in the Caribbean and Pacific islands. Five

position papers dealt with information tools, including agricultural and environmental decision support systems, rule-based systems, geographic information systems, and electronic networks and communication services. These tools were subsequently demonstrated.

Five working groups addressed particular problem areas associated with agroecosystems sustainability in the context of the Caribbean and Pacific islands: *Economics and Public Policy, Agriculture and Food Security, Environmental Issues, Societal Aspects, and Biodiversity, and Genetic Resources.*

## WORKSHOP CONCLUSIONS AND RECOMMENDATIONS

The discussion sessions yielded a wealth of ideas, notions, concerns, and proposals for action. The following synopsis summarizes the salient points that transpired during the discussions. It draws heavily on the report by Working Group IV, chaired by Dr. Vasantha Chase of the Organization of Eastern Caribbean States in St. Lucia, as this group examined the fundamental issues that govern agroecosystems sustainability. Notwithstanding the diversity of the topics on which the different groups focused, there emerged common concerns which precipitated a series of recommendations that are consolidated in the set of recommendations that are presented below.

The participants agreed that the integrity of the agroecosystems in the Caribbean and Pacific islands is in jeopardy. The underlying causes for this dilemma can be traced to a hierarchy of higher-order processes and interactions that affect sustainability. These are (1) value systems based on misguided incentives and underevaluation of natural resources; (2) modes of thought that evidence an inability to cope with complexities and a dominance of reductionist thinking; and (3) aspects of human organization, including sectoral orientation and disciplinary foci, lack of dynamic perspectives and participatory planning, externally driven research agendas, and lack of primary data in appropriate formats. These predicaments result in five principal constraints to agroecosystems sustainability in the Caribbean and Pacific islands:

- lack of stewardship ethic,
- lack of systems thinking,
- dysfunctional institutional frameworks,
- inadequate policies, and
- inappropriate research and development strategies.

The participants recognized the pivotal role that systems technology can play in addressing some, but not all, issues of agroecosystems sustainability. They also realized, however, that there exist impediments to their application. Most critical is the scarcity of reliable environmental and socio-economic data and the lack of maps suitable for geographic analysis. The rapid obsolescence of hardware and software, and the shortage of technical expertise are further deterrents.

In an attempt to develop an approach conducive to achieving agroecosystems sustainability, the workshop participants recommended that:

- a functional network be established that links institutions within and between the two regions and employs state-of-the-art communication technology to facilitate the flow of information;
- the data and knowledge base required for applying systems technology be improved, expanded, harmonized, and made accessible across the two regions;
- sustainable island agroecosystems be defined and quantifiable indices of sustainability be identified;
- participatory approaches to problem solving be devised by goal-driven teams that involve a critical number of stakeholders in the problem identification, planning, implementation, and evaluation process of research and development projects;
- human resource development and people empowerment be promoted through public awareness initiatives, systems-oriented curricula at all educational levels, and training of scientists in the use of systems technology;
- institutional and policy frameworks be established for resource monitoring, marketing, trade, governance, and environmental regulations and their enforcement; and
- a system of incentives and disincentives be devised that incorporates social and environmental costs in costs of goods and services.

The recommendations adopted at the workshop are clearly conceptual rather than operational. The task ahead now is to translate them into actions that precipitate policies and practices that promote sustainability. An Implementation Task Force was therefore constituted at the workshop and charged with developing a long-range plan to foster systems thinking and the use of decision support tools in the context of the workshop recommendations. The task force will further identify two areas for case studies to demonstrate the application of information tools in

realistic agroenvironmental decision scenarios in the Caribbean and Pacific islands.

The challenge confronting the Implementation Task Force is to develop a problem statement and outline approaches and strategies that capture the attention of decision makers, rally support in the political arena, and convince funding agencies. Ultimately, the success of the workshop will have to be judged by the degree to which the task force accomplishes its objectives. If these efforts succeed, the workshop will turn out to be a milestone on the road to sustainable development in the Caribbean and Pacific islands.