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SUSTAINABLE AGRICULTURAL SYSTEMS: AN OVERVIEW

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The title of the Panel session (Agriculture and Environmental Preservation: Are these compatible with Market-led Agricultural Development Policy?) suggests doubts as the promotion of alternative farming methods to current maximum-yield agriculture (National Research Council, 1989) has stirred heated controversies (Council for Agricultural Science and Technology, 1990).

Lately, sustainable agriculture has been conceived to mean a stable undertaking in the global sense, involving all facets of farming and its interaction with society (Harwood, 1990). Operationally, it could be defined as: an agriculture that can evolve indefinitely toward greater human utility, greater efficiency of resource use, yet maintain a balance with the environment that is favourable both to humans and to most other species. Purposely, the concept is so general as to fit any specific or particular agroecological and socioeconomic setting.

Sustainable agriculture goes beyond the Green Revolution model, to evolve into that of agricultural systems in which at least the following needs are addressed:

- Inter-relatedness of all parts of the farming system;

- Maximization of desired biological relationships in the system, and

- Minimization of the use of materials and practices that disrupt those relationships.

It is not a regression to subsistence agriculture nor generalization of low input sustainable agriculture (LISA) as frequently feared (Wagner, 1990).

To translate agricultural sustainability into substance, a public agenda for agricultural development is needed, which includes the three Ps of policy, programmes and projects.

Such an agenda, (Harwood 1990) should seek to, inter alia:

- Increase the utility of agriculture for ensuring

  . reliable and sufficient production
  . adequate livelihood (including equity, stability, safety, lifestyle) of rural families.
  . food of highest quality, safety, diversity and nutritional value, and cultural identification.

- Increase biological/economic productivity, particularly through

  . more production bio-types
  . soil organic matter build-up, replenishment and conservation
  . production/marketing diversity
  . rotations/mixed croppings
  . integrated (crop/livestock) farming
  . nutrient cycling
  . biotechnology

- Maintain ecology, especially by

  . minimizing groundwater contamination
  . minimizing pesticide use
  . minimizing synthetic fertilizer applications
  . maintaining wildlife
  . protecting plant/animal health

- Ensure ability of agriculture to evolve indefinitely, by

  . minimizing soil loss
  . preventing overdraft of fossil groundwater
  . optimizing energy use
  . enhancing biological nitrogen fixation
  . promoting perennial crops (especially certain cereals, legumes, vegetables and fruits)
  . boosting genetic diversity
  . promoting agricultural land ownership and proper use

- Design patterns of balanced geographical distribution and scale of agricultural development, considering

  . physical and institutional infrastructure
  . market channels consistent with economic/social needs
  . equitable business practices

- Activate strategic planning of research, humanize technology development, and adjust technology transfer to the changing needs of agricultural development through

  . enlightened research and technology development policy
  . sensible prioritization of values
  . active participation of farmers in the generation, validation and transfer of technology

The purpose of the agenda is to ensure the successful management of resources so that agriculture can satisfy reasonable human needs while maintaining or enhancing the natural resource base and avoiding environmental degradation (Firebaugh, 1990).

In this context the valorization of genetic resources, especially through biotechnology, becomes a priority for agricultural development.

To achieve its purpose, the agenda should be:

- A people-driven process
- Culture and time specific
- An iterative process of
  - setting goals
  - identifying gaps between existing and desired states of agricultural development
  - setting priorities, and
  - allocating resources according to the priorities.

Any agenda for sustainable agricultural development should take into account the level of development of each country and its ecological setting. In this perspective, the Caribbean as a region and the individual countries within it must decide on the most appropriate agenda, through continued assessment of present and future economic, social and ecological scenarios of agriculture within and outside the region.

For that purpose, the Ministry of Agriculture as rector of the sector in each country, should identify and establish mechanisms and means which lead to the designing of coherent agricultural development policies, strategic planning, identification and implementation of relevant technological development and transfer programmes, prioritization of projects within the programmes, provision of adequate support services to farmers by both the public and private sectors, and monitoring and enforcement of regulations aimed at ensuring agricultural sustainability.

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