

PREFACE

On April 26–30, 1999 a group of 24 representatives from universities (Cornell, Berkeley, Essex, Greenwich, Minnesota, Wageningen), multi-lateral organisations (World Bank, FAO), International Agricultural Research Centers (IFPRI, ICRAF, ICLARM), and NGOs (Rodale, Care, CLADES, Cosecha, RFF, AS-PTA, WRI), held an International Conference on Sustainable Agriculture: evaluation of old practices and new paradigms at the Rockefeller Foundation Centre, Bellagio, Italy.

The group reached the following conclusions which can also be gleaned from the collection of papers contained in this special issue of “Sustainable Agriculture” of the journal *Environment, Development and Sustainability*.

Despite the fact that global population growth is slowing down, agricultural systems around the world will need to double food production in the next century. Increased food production, however, will not eliminate hunger if poverty and access to food and distribution are not dealt with. Conventional wisdom asserts that doubling food supply requires more effort to ‘modernise’ agriculture through emphasis on mechanisation, pesticides, fertilisers and biotechnology. But these technologies are often not suited to the conditions and needs of small farmers who have already been bypassed by agricultural intensification efforts. Moreover, the sustainability of these modern technologies has been questioned.

This meeting concluded that much of the needed food can be produced by small farmers located in marginal environments in the developing world. In fact, new approaches and technologies spearheaded by farmers, governments and NGOs around the world are already making a significant contribution to food security at the household, national, and regional levels. A variety of agroecological and participatory approaches in many countries were reviewed, and showed very positive outcomes even under adverse conditions. Potentials include:

- raising cereal yields from 50 to 200 percent;
- increasing stability of production through diversification and soil/water management;
- improving diets and income with appropriate support and spread of these approaches;
- and
- contributing to national food security and to exports.

These are often realised in small-scale production, but can also be evident in larger scale systems. In Africa, for example, some 45 projects were found to have helped 750,000 farmers to significantly increase yields.

Additionally, these approaches have ecological and economic advantages such as:

- soil and water conservation and soil health enhancement;
- regulation of pests and diseases through environmentally sound methods;



- provision of environmental services and avoidance of contamination/degradation; and
- biodiversity enhancement and promotion of ecosystem integrity.

Yield increases have been achieved using technological approaches based on agroecological principles that emphasise diversity, synergy, recycling and integration; and social processes that emphasise the value of adult and non-formal education as well as community involvement. When such features are optimised, yield enhancement and stability of production are achieved, as well as a series of ecological services such as conservation of agrobiodiversity, soil and water conservation and enhancement, improved biological pest control, etc., regardless of scale and or farm size. What varies are the technological forms utilised for optimising key agroecological processes. This variation is best done by farmers themselves.

Thus social capital formation is as important as technologies involved, as is the capability of local communities to innovate, evaluate, and adapt as they involve themselves in a development process based on local knowledge and organisation. These experiences which emphasise farmer to farmer research and grassroots extension approaches, represent countless demonstrations of talent, creativity and scientific capability in rural communities. They point to the fact that human resource development is the cornerstone of any strategy aimed at increasing options for rural people and especially resource-poor farmers.

Promising research areas for evaluation and promotion of alternative technologies and policies include: green manure, cover crops, improved fallows, agroforestry, aquaculture, crop-livestock mixed systems, IPM, biological control, organic soil management and nutrient cycling, processes of technology adaptation and adoption, supportive policies, institutional partnerships and market development. Whether the potential and spread of these thousands of local agroecological innovations is realised also depends on investments, policies and attitude changes on the part of researchers and policy makers. Failure to promote people centred agricultural research and development and to invest in alternative technological approaches will forego opportunities to raise agricultural productivity in economically viable, environmentally benign, and socially uplifting ways.

It is urgent that governments and international public organisations encourage and support effective partnerships with NGOs, local universities and farmers' organisations in order to assist and empower poor farmers to achieve food security, income generation, and natural resource conservation.

A major challenge for the future entails promoting institutional and policy changes to realise the potential of the alternative approaches. Changes include:

- increasing public investments in agroecological-participatory methods;
- changes in policies to stop subsidies of conventional technologies and to provide support for agroecological approaches;
- improvement of infrastructure for poor and marginal areas;
- appropriate equitable market opportunities including market access and market information;
- security of tenure and progressive decentralisation processes;
- change in attitudes and philosophy among decision-makers, scientists, and others to acknowledge alternatives; and

- strategies of institutions encouraging equitable institutional partnerships with local NGOs and farmers; replace top-down transfer of technology model with participatory technology development and farmer centred research and extension.

Scaling-up of these efforts is needed in order to spread more widely the benefits of successful sustainable agricultural initiatives. Principles and lessons from the analysed case-studies shed light on how to test and apply such principles among a larger group of farmers in wider areas in each region.

Failure to follow these recommended strategies and thus to promote people-centred agriculture and rural development will accelerate migration and will further exacerbate food insecurity problems, as well as natural resource degradation – which in turn will continue to undermine production and aggregate poverty and hunger. For the first time, however, it is clear that technologies and processes are available that are able to produce much more food for poorer groups without causing damage to the natural environment.