EDITORIAL

Developing a research strategy to increase food production in Sub-Saharan Africa

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Sub-Saharan Africa today confronts the greatest challenge of all the developing regions of the world. Food shortages and famine, arising from declining per capita food production and unfavorable climatic conditions, such as drought, have recently placed this region at the center of world concern over human nutrition.

The nature and scale of the challenges facing African agriculture are increasingly acknowledged by development agencies, national governments and farmers who together share the formidable task of increasing and improving food production throughout the continent. There is also a growing and encouraging realization that the development of effective food production policies in sub-Saharan African countries will require inputs at various levels and from different areas; the development impetus must continue at international, national and local levels and it is also vital that the key components essential for effective agricultural development —research, training and extension — are harnessed to achieve optimum impact.

Agricultural research has a crucial role in the complex task of developing agriculture and food production throughout Africa in the years and decades ahead. The international agricultural research system, through the Consultative Group for International Agricultural Research (CGIAR), assesses priorities and mobilizes financial and human resources to tackle the problems identified in partnership with national programs. The research needs of the Sahelian region are being tackled by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); the International Livestock Center for Africa (ILCA) concentrates on research to improve livestock production systems in Africa and the International Institute of Tropical Agriculture (IITA) undertakes research to improve food crop production and farming systems in the humid tropical regions of the continent. The broad goal of CGIAR in Africa is to develop a stream of appropriate technologies to improve food production at village and farm levels. To undertake this major task effectively, it is necessary to have a deep and full understanding of African agriculture — its traditions, circumstances and constraints.

Agricultural scientists and development specialists with knowledge and experience of African farming realize that there can be no "green revolution" in Africa similar to the one so widely publicized in Asia. This is because Africa's traditional agriculture is much more complex with many food crops grown across a wide diversity of ecologies. Moreover, these crops to date have received considerably less research attention than the cereal staples (rice and wheat) of Asia.

The dilemma facing African agriculture is how to achieve substantial increases in food production from fragile soils of low fertility that are already threatened by environmental degradation and erosion. Traditionally, farmers have coped with these difficulties through "shifting cultivation" — the practice of shifting crops to new ground every couple of years and relying on prolonged fallow periods to restore soil fertility. Africa is much more likely to experience a "quiet revolution" in increasing and sustaining its food production. To succeed, it must involve the improvement of many crops, the development of cropping systems that optimize production but conserve soils and strong collaboration between all the partners in agricultural development.

The establishment of the International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria in 1967 accelerated systematic, applied research to develop improved varieties of major African crops such as cassava, yam, sweet potato, cowpea, maize, and rice. The Institute was also mandated to develop improved farming systems for the humid and sub-humid ecologies of tropical Africa. The accomplishments of the Institute to date are substantial.

IITA has developed new varieties of cassava, yams and sweet potatoes which achieve substantial increases in yields and also possess resistance to major diseases. New technologies have been developed for seed yam production and tissue culture techniques for the international distribution of disease-free, vegetatively propagated crops.

Improved varieties of cowpeas and soybeans have been developed for a wide range of African ecologies. The Institute has also developed improved high yielding varieties of maize and rice, concentrating on developing the resistance of these crops to two major diseases in Africa — maize streak virus and rice blast.

Considerable progress has been made in developing new and appropriate farming systems for African soils and ecologies. Alley farming and minimum tillage techniques are prime examples of agricultural technologies that enable farmers to increase production while conserving fragile soils. Moreover, improved farming systems that integrate traditional and modern emerging technologies are gradually being developed and tested in on-farm trials.

New co-operative research ventures have been initiated and developed which aim to strengthen partnerships with national research programs and to facilitate technology transfer to individual countries and farmers.

Despite these considerable achievements, the challenges facing IITA in Africa are formidable. Demographers project that African population will grow from its present share of 10 percent of world population to about 25 percent before global population stabilizes sometime in the 21st century. The persistent increase in population will not only increase demand for food but will inevitably place great pressures on arable land in many parts of Africa.

IITA, as the major international crop research institute in the humid tropics of Africa, is now gearing itself to meet the enormous challenges ahead in the most effective way possible. The Institute has embarked on a major Strategic Planning Study that will define research priorities and establish strategic directions for the future. The objectives are to sharpen IITA's institutional mission and provide a coherent framework that will facilitate the optimum allocation of scarce resources within and across its research program activities. The contribution of research to greater food production during the coming decade must come largely from improved varieties of crops that are well adapted to African farming conditions. However, the real benefits of improved crop varieties will only be realized when they are widely adopted and grown by farmers. Research in farming systems, therefore, must be strengthened to ensure that new technologies are relevant to, and within the management capability of, Africa's small-scale farmers. The central research objective of the Institute will be to increase the productivity and income of small family farms in sub-Saharan Africa. These farms have the potential to adopt new technology and increase food production in the lowland humid and subhumid tropics of Africa.

IITA, in partnership with national research programs, aims to implement a clearly defined, well focused and targeted agricultural research strategy for Africa. Such a strategy will build on achievements to date, make the most of available resources and present real opportunities for farmers in sub-Saharan Africa to produce much needed additional food. The entire research team at IITA, our African national partners in agricultural development, and many African farmers are under no illusions about the tough job ahead — but it's a job that can be done and which must be tackled with realism, optimism and a lot of hard work.

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