



## DRIVING ECONOMIC DEVELOPMENT IN AFRICA THROUGH AGRICULTURE

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### Abstract

#### Delivering the potential of African agriculture: the IITA vision

What is the current situation regarding agriculture in sub-Saharan Africa? Is the media telling Canadians the entire story? Is the news all bad, or are there reasons to be optimistic?

This presentation will deal with the technical aspects of both agricultural challenges and opportunities within the African continent. Dr. Stan Blade will provide several examples of how the International Institute of Tropical Agriculture has contributed to enhancing food security as well as improving livelihoods of Africans. A broader overview of international agricultural development will be presented as a keynote presentation at the final session of FarmTech 2006 ("Always a skeptic, never a cynic: one Canadian's view of what international agricultural development can teach us".)

The combined national and international agricultural research efforts on food crops over the last 30 years have brought very significant benefits to sub-Saharan Africa. This is well demonstrated by summarizing the impact of IITA research on the production of two major food crops, cassava and maize. Through the introduction of more productive varieties that are resistant to the prevailing diseases, and the effective biological control of the cassava mealy bug, large-scale famine has been avoided. Without these research efforts, 25% less maize would currently be produced in sub-Saharan Africa, equal to 8 million tonnes per year, or the food requirements of 40 million people. Cassava production would be 50% less, or over 13 million tonnes of dry cassava per year, enough to meet the calorie requirements of 65 million people. For these two crops alone research has meant that over 100 million more people can be fed.

Increasing agricultural production, as well as farm productivity and profitability, in sub-Saharan Africa, where soils are infertile, rainfall is erratic, inputs are not regularly available, and most of the farmers have few technology options at their disposal, is one of the most challenging missions. Local capacity to undertake the full range of agricultural research and development activities, with some exceptions, remains generally weak.

Increased globalization offers new opportunities and challenges for agricultural research and development, such as better access to information and new technologies. At the same time increased competitiveness requires, for example, the development of more cost-efficient production practices and well-structured marketing systems. Research should effectively explore these opportunities and address these challenges for the benefit of agricultural development in sub-Saharan Africa.

### 1. Objectives and approaches

To accomplish its mission, IITA generates scientific knowledge, delivers training, provides information, and participates in technology transfer activities with a wide range of partners, with the principle objectives to:

- develop and improve systems for the effective management and conservation of natural resources for sustainable agriculture,
- increase agricultural productivity and enhance commercialization opportunities for agricultural products to ensure improved food security, raised for farmer incomes, and to contribute to the development of an effective agro-industrial sector, and
- help strengthen national and regional research capacity.

IITA research focuses on small- and medium-scale farmers and entrepreneurs who are open to the adoption of new technologies, to ensure that opportunities for positive change are realized. IITA recognizes the central role women play in agricultural production and ensuring household food security, and that the roles of women and men vary within the production systems. Research at IITA will be guided by the principle of equal opportunities, including access to technology, information services, and training. Special attention will be given to women's needs for labour-saving technologies. The institute has institutionalized its different approaches to meeting the needs of women and children.

**The goal is to make agriculture attractive and profitable to a new generation of the rural population, resulting in an enhanced standard of living with better health and longevity.** Furthermore, research also seeks to abate the potentially negative consequences of global climatic change and the increasing impact of human diseases such as HIV/AIDS and malaria on society.

These objectives and approaches contribute to the Consultative Group on International Agricultural Research (CGIAR) goal of poverty reduction, especially for the most vulnerable groups, as well as to protection of the environment and sustainable food security. In pursuing these objectives, the institute will preserve a balance among strategic, applied, and participatory research. This is the most effective approach for the development of technologies that will be readily adapted and adopted.



Sub-Saharan Africa contains the greatest intensity of poverty and under-nourishment in the world today. Worse, the rate of increase in numbers of people falling below the poverty line in the coming decades is projected to be greatest in this region. The savannas, humid forest, and mid-altitude are the key zones for the Institute's activities. A large proportion of the population and most of the poor live in these zones. These zones are also important because they produce a large share of the food crops grown in sub-Saharan Africa.

## **2. Guiding principles for research**

IITA aims to improve food systems in sub-Saharan Africa in a sustainable manner through the following:

- adopting a 'systems' orientation throughout the institute in order to ensure focus on the critical components of the systems and to be able to put together improved elements from different disciplines.
- giving high priority to managing natural resource in a sustainable manner and to preserving biodiversity and improving system resilience in the face of socioeconomic and environmental changes.
- conducting research in areas such as social science, soil and crop management, breeding for increased production, quality, and tolerance to various stresses, and enhanced post harvest utilization and food safety.
- undertaking crop improvement activities on all crops as required to fulfill the eco-regional mandate, with special emphasis on cassava, maize, and soybean for Africa, and cowpea, plantain and banana, and yam at the global level.
- protecting and preserving what is produced by taking advantage of the institute's capacity for dealing with introduced pests through biological control, and with endemic pest problems, including post harvest pests, through integrated pest management approaches.
- paying greater attention to higher external input use and sustainable strategies for land-use and agricultural intensification.
- analyzing market opportunities for existing and novel value-added products and developing appropriate post harvest systems, resulting in commercially viable farm and agro-industrial enterprises.
- considering specific policy issues which would assist regional bodies and national and local governments to create an environment conducive to agricultural development, the reduction of poverty, and the amelioration of the effects of major human diseases and global warming.
- defining and employing appropriate poverty indicators which will help ensure that the institute's research and related activities impact positively and in a sustainable manner on the livelihoods and well-being of low-income people in particular.
- exploring fully the benefits to be derived from the optimal use of modern science and information technology, and collaborative alliances.

## **Capacity building**

IITA has trained 9000 Africans through a variety of short courses, technical workshops and degree training (900 Ph.D. and M.Sc. students have done their research at IITA). The Institute maintains its multidimensional approach to the training and institutional strengthening of the full range of its national partners. IITA disseminates information on all aspects of its research and provides training to interested stakeholders, involves partner scientists directly in implementation of IITA activities and projects, and includes competitive research fellowships for African graduate students. IITA gives particular encouragement to the participation of women in its training activities.

## **Partnerships**

Based upon comparative advantages, IITA enters into a wide array of partnerships at international, regional, national, and local levels. In particular, IITA forms strong partnerships and collaborative arrangements with the national and regional bodies within its mandate region. IITA has developed a productive working relationship with the African Union, as well as the Forum for Agricultural Research in Africa.

The three regional agricultural research organizations, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), the West and Central African Council for Agricultural Research and Development (CORAF/WECARD), and the Southern Africa Centre for Cooperation in Agricultural Research and Training (SADC/FANR), each have a strategic plan that involved an extensive priority-setting exercise with broad consultation of all stakeholders. Therefore, these plans serve as an important basis for the development of IITA's research agenda.

IITA collaborates closely with other CGIAR centers when there is potential for synergy, and participates in relevant CGIAR systemwide and ecoregional programs.

The Institute also seeks assistance through formal and informal collaborative links and partnerships with relevant advanced research organizations, private sector companies, nongovernmental organizations (NGOs), and farmers' organizations.



### **3. The research agenda**

The research agenda is heavily influenced by past and future trends in sub-Saharan Africa. There will be a constant decline in agricultural land available per rural inhabitant and urban populations will continue to grow rapidly. However, by 2010, 60% of the economically active population in sub-Saharan Africa are projected to still be employed in agriculture. This will be accompanied by a rapid growth in demand for food, both in quantity and quality. Appropriate technologies can lead to very positive results in sub-Saharan Africa. The strategic plans and priorities developed by the three regional agricultural research organizations provide a solid basis for the new research agenda. These are further refined through analysis of the specific agricultural development challenges and research needs in the agroecological zones in which IITA is working.

Changes in the IITA research agenda include the following: a shift in focus to encompass all of the humid forest, moist savanna, and mid-altitude agroecological zones of sub-Saharan Africa, and a move from single crop research to an integrated, multidisciplinary systems approach.

For the coming 10 years, the following evolving strategic issues related to agricultural research for development in sub-Saharan Africa, have to be taken into consideration in setting the research agenda.

- Significantly increased agricultural productivity with emphasis on improved food quality, value chain development and commercial competitiveness.
- Effective use of new technologies delivered through the research for development continuum with the aim of achieving greater impact.
- Poverty reduction by further strengthening the research agenda with respect to income-generation opportunities, a broader range of crops, post harvest technologies, marketing, food quality and policy options.
- How we can work with the medical community to identify agricultural research products (such as the incorporation of grain legumes in immuno-deficient people) which can alleviate the impact of major diseases on rural and urban populations.
- Improved understanding of the evolution of crop-livestock integration, in order to optimize synergies and minimize competition between the two enterprises.
- Optimal use of biotechnology in agricultural research and development, including effective collaboration with advanced research institutes.
- Increased labour productivity and availability, including use of appropriate farm mechanization, appropriate herbicide application, farmer training and education, improved communication, and better access to inputs.
- Greater use of integrated pest management methods to reduce pre- and post harvest losses and improve food quality.
- Addressing environmental and human safety issues related to the use of pesticides, particularly in rapidly evolving peri-urban agriculture.
- Further strengthening of partnerships with NARS, NGOs, farmer organizations, private sector, etc., including devolution of activities as appropriate.
- Work with partners to access intellectual property which will provide improved technologies such as new varieties for African farmers.
- Continued strengthening of national agricultural research and extension systems capacity.

While addressing these issues we make these assumptions regarding the execution of IITA's research agenda.

- All IITA activities must contribute to impact for end-users.
- IITA takes a holistic approach, through which constraints and opportunities are assessed at the farm household and community levels. The focus is on the issues that will directly and to the greatest extent possible, address the goal of poverty reduction through agricultural activities without destroying the resource base.
- IITA continues to work on genetic improvement of its current range of crops and related production systems, as well as on crops that provide additional income opportunities.
- The Institute continues to carry out much of its research in representative benchmark areas, and explore opportunities to extrapolate results to the wider agroecological zone.
- An appropriate balance is maintained between strategic and applied research.
- Research continues to focus on small- and medium-scale farmers, with emphasis on increased productivity through intensified production systems.



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## References

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