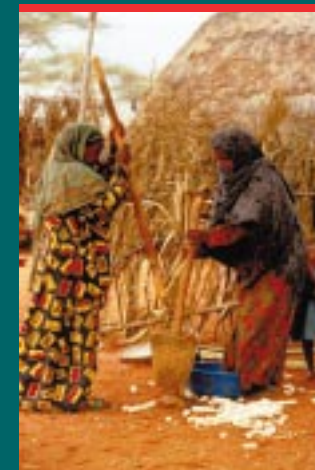




The CGIAR Partnership



Working for Sustainable Food Security



CONSULTATIVE GROUP
ON INTERNATIONAL AGRICULTURAL RESEARCH
www.cgiar.org

CONSULTATIVE GROUP
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FOREWORD

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The Consultative Group on International Agricultural Research (CGIAR) is a unique global partnership with a compelling international agenda. Established in the early 1970s, the CGIAR works to promote food security, poverty eradication, and the sound management of natural resources throughout the developing world. It is the largest scientific network of its kind.

CGIAR pursues these objectives through the diverse activities of 16 international research centers. CGIAR members – 58 industrial and developing countries, private foundations, and regional and international organizations – provide vital financial assistance, technical support, and strategic direction. A host of other public and private organizations work with the partnership as donors, research associates, and advisors.

Agriculture remains the cornerstone of development in poor countries, where more than 70 percent of people depend on the land for their livelihoods. Research is one key means by which the world's knowledge of farming and natural ecosystems is extended and enhanced. CGIAR Centers carry out research on food crops, forests, livestock, irrigation and water management, and aquatic resources worldwide. The knowledge that they generate pays handsome dividends in terms of increased output, greater incomes, and sounder utilization of resources.

One formidable challenge facing developing countries is supplying growing populations with sufficient food. At the minimum, there will be three billion more people on the planet before the population stabilizes, and almost all of those will be in the developing countries. Rural development will continue to be the engine for fighting malnutrition and poverty, for improving trade, and for overall economic expansion. Such advances, however, must be achieved through methods that guard the integrity of natural resources.

We enter the 21st century on the cusp of a new revolution in the biological sciences. We have likewise acquired better understanding about the interdependencies of fragile ecosystems at the macro-level. The new scientific tools being made available must be firmly grasped and utilized for the benefit of the world's less-advantaged – the poor farmers and the urban under-fed.

The CGIAR is the one international organization sufficiently capable, flexible, well trusted, and well positioned to keep public-domain science on a socially beneficial and ecologically sustainable course. The CGIAR Partnership is open to countries and organizations sharing a commitment to a common research agenda and a readiness to invest through financial support.

– Ismail Serageldin, CGIAR Chairman

GLOBAL PARTNERSHIP FOR FOOD SECURITY

The need for a special partnership within the global agricultural research community focused on combating hunger and poverty through productivity-oriented research was first perceived in the late 1960s, in response to the specter of widespread famine in parts of Asia. Internationally-supported work at several centers to develop new varieties of rice and wheat had begun to generate unprecedented harvests. Their success fueled hopes that a “Green Revolution” of agricultural modernization could be extended worldwide.

Leaders from 18 international organizations, foundations, and concerned governments formally joined together in 1971 as the first Members of the CGIAR. Through their continuing support, hundreds of new wheat and rice varieties were developed, released, and planted during the Green Revolution,



adding an estimated US\$50 billion to the value of global food supplies over two decades. The food-to-population balance in the most threatened countries was transformed; and the threat of widespread famine was averted.

To build on the early achievements, new CGIAR Centers were established to pioneer improvements in other key food crops, such as legumes, roots, tubers

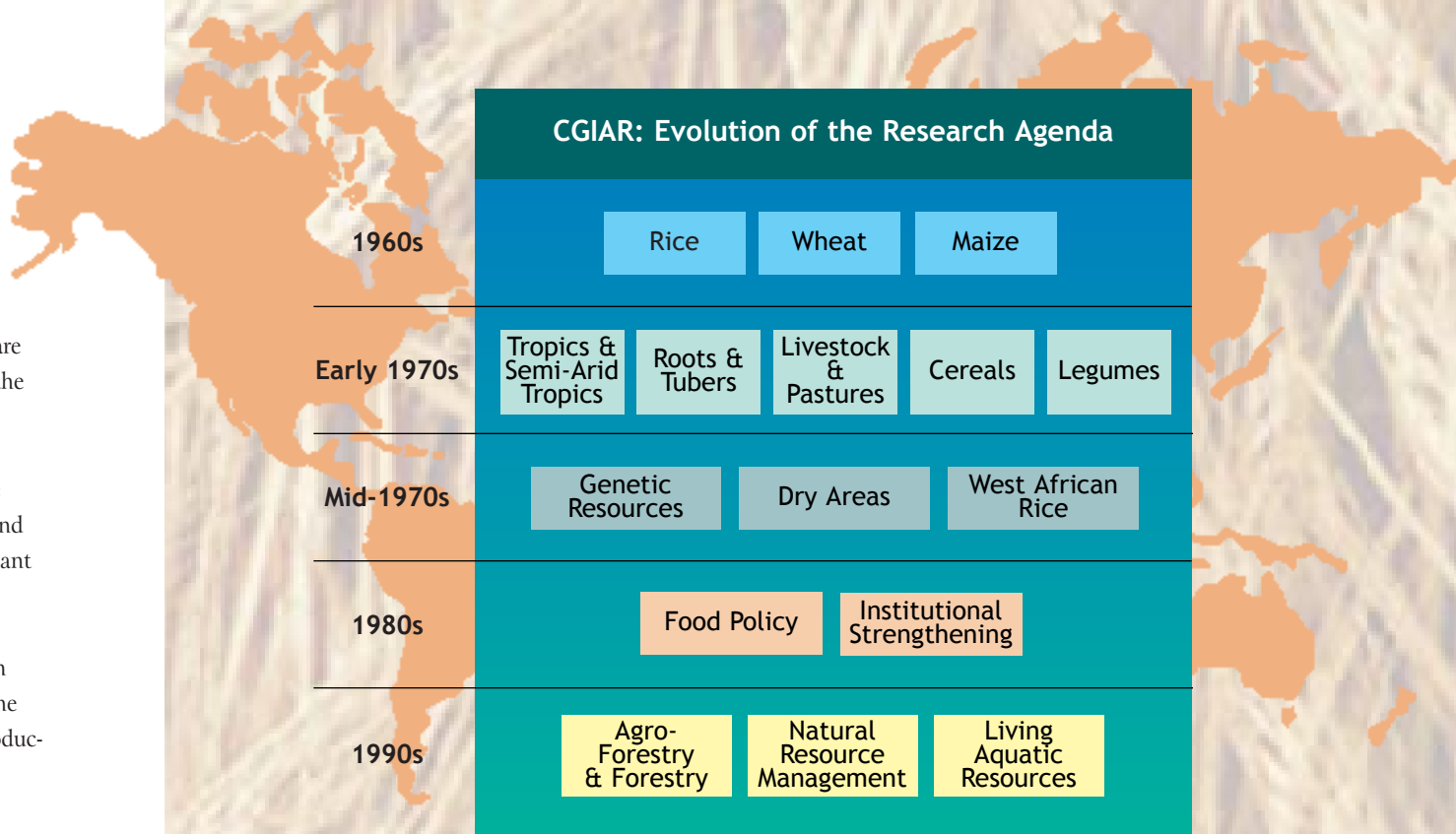
CGIAR’s Mission:

To contribute to food security and poverty eradication in developing countries through research, partnership, capacity building, and policy support, promoting sustainable agricultural development based on the environmentally sound management of natural resources.

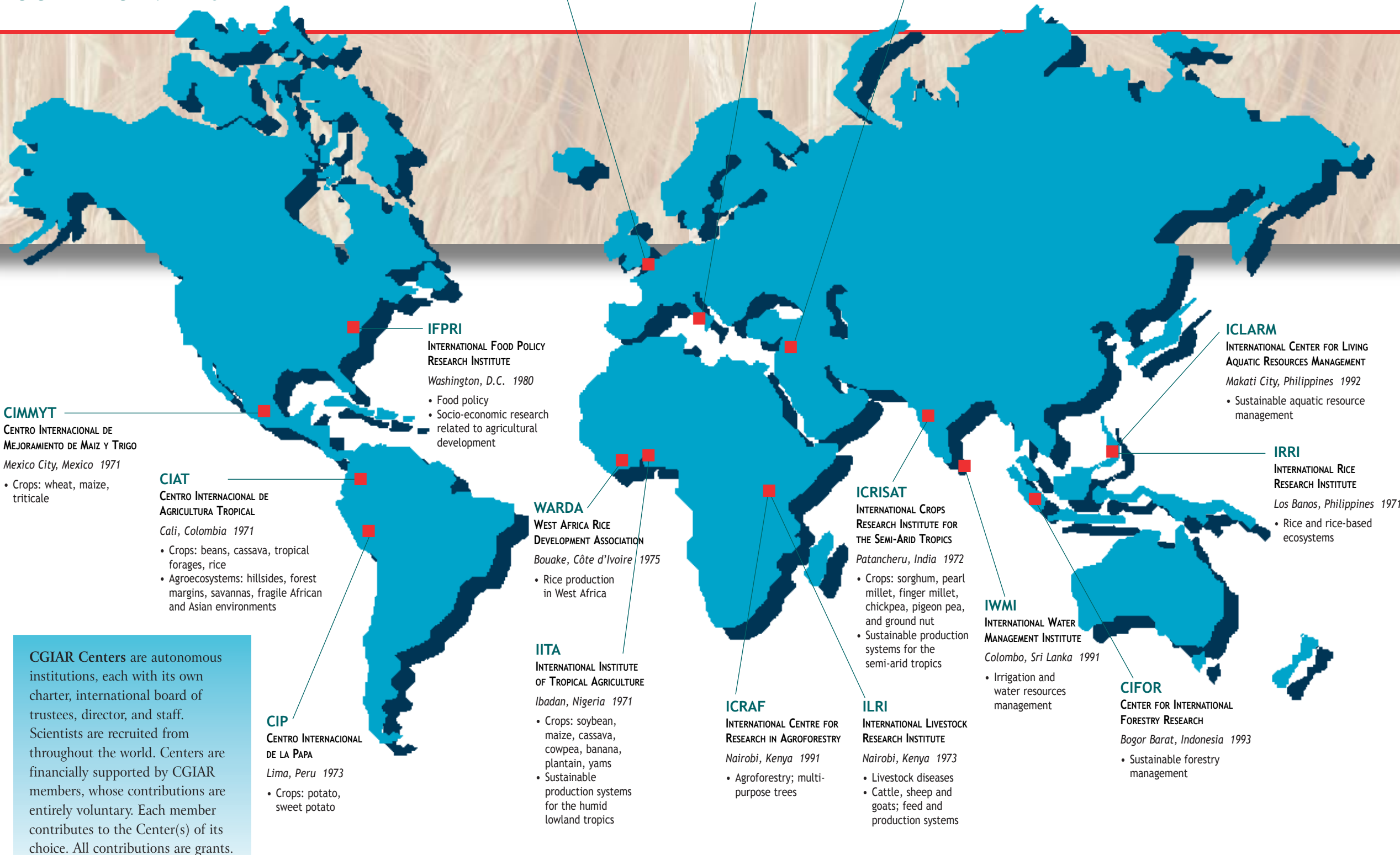
and other cereals, and to concentrate on better management of livestock. Centers were likewise created to evaluate the special problems of dry, semi-arid, and tropical regions, and to conduct research on pressing issues involving forestry, agroforestry, water management, fish and marine resources. Centers were also set up to examine national and international food policies, and to build the capacity of agricultural research at the national level.

Today, 16 CGIAR Centers around the world are harnessing cutting-edge knowledge to help meet the world’s enormous food needs – with a steadfast allegiance to scientific excellence and the public welfare. All of the benefits of CGIAR research are kept within the public domain; new production and natural resource management technologies and plant varieties are available free to interested parties throughout the world.

The CGIAR’s research agenda focuses on both strategic and applied research. It extends across the entire range of problems affecting agricultural productivity, and links these to the broader concerns for poverty eradication, sustainability, biodiversity, natural resource management, capacity building, and policy improvement. Today, CGIAR scientists and researchers are working in more than 100 countries.



CGIAR CENTERS



STRUCTURE AND FINANCING

CRITICAL AGENDA: FOOD, POVERTY, AND ENVIRONMENT



One-quarter of the people in the developing world survive on less than US\$1 a day.



The CGIAR Partnership is comprised of the Consultative Group (the Chairman, Cosponsors, Country, International Organization, and Foundation Members), 16 research Centers, a small Secretariat, and various CGIAR and Center committees. The four Cosponsors of the CGIAR are the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the World Bank, and the UN Food and Agriculture Organization (FAO). Ismail Serageldin, Vice President for Special Programs at the World Bank, currently serves as the CGIAR Chairman.

The CGIAR's research budget for 1998 was US\$340 million, an increase of over 40 percent since the early 1990s. Individual Members support Centers and programs of their choice, and each Center directly receives and spends funds for which it is accountable to its Members.

In the early 1990s, six developing countries were contributing financially; by mid-1998, the South-North ratio of Member countries was roughly balanced. While industrial countries account for about two-thirds of CGIAR financing, developing country support has grown more than four-fold during the 1990s.

Unprecedented challenges confront developing countries today. Populations are larger, cities are overcrowded, and fresh water supplies are increasingly scarce. Poverty and malnutrition remain unchecked in many regions, even as farmers press the limits of technology and ecology to produce greater amounts of food.

The Food Security Challenge

At least 800 million people do not have access to an adequate food supply, and nearly one-half billion people are chronically malnourished – one-third of them children.

Within 25 years, the food needs of an additional 3 billion people will have to be met. Yields of major food crops will need to increase by 50 percent.

In less than 15 years, there will be 26 cities around the world with 10 million people. Feeding Lagos, Calcutta, or Mexico City will require at least 6,000 tons of food shipments each day.

The Poverty Challenge

- One-quarter of the people in the developing world survive on less than US\$1 a day.
- 1.3 billion people worldwide live without clean drinking water, 2 billion without adequate sanitation, and 2 billion without electricity.
- 70 percent of the absolute poor live in rural areas of developing countries; farming remains the primary link between the poor and their fragile environment.

The Environmental Challenge

- Agricultural resources are threatened; nearly 40 percent of the world's croplands are already degraded. Other natural income sources for the poor – the oceans, forests, rivers and rangelands – face similar threats.
- Fresh water scarcity poses the greatest threat to food security, human health, and ecosystems. Within 25 years, one-quarter of the world's population will suffer severe water scarcity. Roughly 80 percent of all water consumption goes to farming;

- Tropical forests are home to 50 to 90 percent of the estimated 10 million species on Earth. Each year, over 17 million hectares of tropical forests disappear – an area four times the size of Switzerland. Within 30 years, 5 to 10 percent of all tropical forest species could be extinct.
- One-third of the world's coastlines face serious environmental degradation. Nearly 60 percent of the earth's coral reefs are now threatened by pollution and other dangers.

These food, poverty, and environmental challenges will require determined country actions and sizeable support from the international community. Lasting solutions will require an integrated approach that addresses causal linkages. Without vision, leadership, and ample technical and financial help, many countries will suffer increasing human deprivation and widespread environmental degradation.

AGRICULTURAL RESEARCH: HIGH RATES OF RETURN



Disease-resistant, hybrid pigeon peas developed by CGIAR researchers have boosted production by up to 35 percent and added US\$100 million to farm incomes in central and southern India.



The CGIAR Partnership conducts research on almost 30 food commodities and dozens of ecosystems. Independent studies consistently demonstrate that such research earns handsome rates of return, for example, 65 percent on rice in India and Indonesia, and 50 percent on wheat in all developing countries. For Members, CGIAR programs represent good investment opportunities, allowing them to target funds to areas of research and regions that align with their development priorities and research agenda.

Selected Highlights and Achievements:

- Over 55 million hectares in developing countries are planted to CGIAR-related wheat varieties each year, accounting for about 80 percent of total wheat production. The additional output has been valued at more than US\$1.8 billion per year.
- More than 90 percent of irrigated rice production in Latin America can be traced to semi-dwarf varieties introduced with help from the CGIAR. Market prices have been cut in half during three decades, and consumers benefit by more than US\$500 million annually.
- Maize production in West and Central Africa rose more than three-fold between 1981 and 1996 due to new high-yielding, early maturing varieties – sufficient to feed 40 million people annually and representing a value of US\$1.2 billion.
- More than half of the 80 percent rise in global food output since the early 1970s has accrued in developing countries. Per capita caloric consumption in the developing world has increased 26 percent during the same period, bringing improvements in nutrition, health, and life expectancy.
- More than 300 million hectares of ecologically fragile land were saved – equivalent to all the farmland in the United States, Canada and Brazil – due to intensive use of technologies pioneered by the CGIAR.
- Fresh water fish production in Asia has increased dramatically through development of improved strains of tilapia, a hardy species that grows 60 percent faster than other farmed strains.

- Pesticide use in developing countries has been reduced substantially through integrated pest management (IPM) and biological control methods developed by the CGIAR and its collaborators. Control of cassava pests alone has added over US\$400 million to output in sub-Saharan Africa each year.
- CGIAR's extensive collection of plant genetic resources is guarding biodiversity: it includes over 6,000 endangered varieties of Latin American maize; 5,400 potato specimens; and more than 40,000 accessions of crops and plants of importance in Africa; and 117,000 samples of crops grown in the world's dry areas.

Dividends for Developing Nations and the Global Economy

By helping boost farm production in developing countries, CGIAR research has contributed in several important ways:

- Greater output, lower food prices, and higher incomes have made more food accessible to more poor people, even as market demand has grown with rising populations.

- Many developing countries have lowered their dependency on food imports and food aid.
- Scientific capacity in developing countries has been strengthened through institution building and training. Some 50,000 developing-country scientists have been trained at CGIAR Centers.
- Policy research undertaken by the CGIAR has helped to improve agricultural policies in developing countries, promoting the spread of new technologies and better management of natural resources.
- A thriving agriculture is critical to national economic health: data from 42 developing countries shows that a US\$1 increase in farm production generates more than US\$2.3 of economic growth overall.

- Increasing farm productivity and rising incomes in developing countries stimulate new trade opportunities for developed countries: every dollar increase in developing country farm output leads to 73 cents in new imports – including 24 cents in agricultural imports.

WORK PROGRAM AND PRIORITIES



The CGIAR's research budget represents roughly 4 percent of total public spending on agricultural research worldwide. It must, therefore, be strategically focused and responsive to changes in the broader institutional environment. The current agenda of CGIAR Centers concentrates on five principal challenges:

Increasing Productivity. The CGIAR strives to make developing country agriculture more productive through genetic improvements in plants, livestock, fish, and trees, and through better management practices. CGIAR productivity research is building into plants greater resistance to insects, diseases, and other environmental stresses that adversely affect productivity and the stability of production. Such improved plants can protect farmers from losses, while guarding the environment because they require fewer, if any, chemical inputs.

Integrating Natural Resource Management. Preserving the environment, especially soil and water, and reducing the impact of agriculture on the ecosystem is an essential and growing part of research efforts. The CGIAR plays a leading role in

developing new approaches to managing agricultural ecosystems, and in pioneering solutions to pressing environmental problems.

Preserving Biodiversity. Through its worldwide network, the CGIAR holds in trust one of the world's largest *ex situ* collections of plant genetic resources, containing over 600,000 accessions of more than 3,000 crop, forage, and pasture species. Duplicates of these materials are freely available to researchers around the world so that new gene combinations can be brought to bear on current problems. The CGIAR was the first to place its collections under the auspices of FAO as the basis of an international network of *ex situ* collections.

Improving National Policies. Agriculture, business, and consumers alike are heavily affected by public policy. The CGIAR's research aims to help improve policies that strongly influence the spread of new technologies and the management and conservation of natural resources.

Building Capacity. The CGIAR collaborates extensively with national agricultural research systems (NARS) in developing countries through joint research initiatives, support for improved

management and administration, and formal training programs for research staff. CGIAR Centers also work with scores of universities, local research organizations, private companies, and government research institutions in dozens of developing countries. Through such co-operation, countries build scientific capabilities and stronger institutions and get new technologies into farmer's fields; CGIAR Centers gain field cooperation for multi-location trials and reliable data on genotype-environment interactions. Together, they are building a global knowledge system for food security.

CGIAR IN THE 21ST CENTURY

Ensuring food security, poverty reduction, and environmental protection in the next century will require accelerated research on several key fronts:

Enhancing Productivity and Incomes

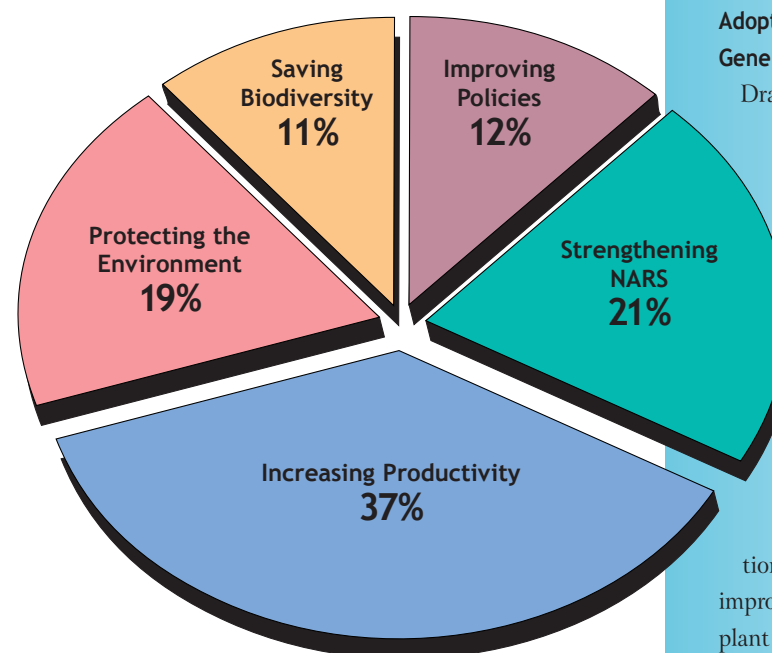
The productivity of developing country agriculture must continue to grow. Together with its national and international partners, the CGIAR is promoting continuing genetic improvements in plants, livestock, fish and trees, and better natural resource management practices. In addition to increasing yield potential, current research is increasing varietal resistance to insect pests, diseases and abiotic stresses that affect both output and production stability in the tropics. Such improvements are economical and environment-friendly as they reduce the need for costly and hazardous chemicals.

Adopting an Integrated Gene Management Approach

Dramatic advances are underway in understanding of how organisms function at the molecular level. Researchers now have the capability to manipulate DNA molecules, and knowledge about the structure of plant and animal genomes is already contributing to the program of biotechnology.

The materials in CGIAR gene banks represent important resources for research. Integrated gene management means conservation and utilization of such materials for crop and animal improvement making use of both conventional plant breeding and modern biotechnology. The CGIAR is conducting research in the

CGIAR INVESTMENTS BY PRINCIPAL UNDERTAKING, 1998



development and application of these technologies for food crops of importance to the poor in the developing world. Areas of research include genomics, molecular breeding, diagnostics, and vaccine development.

The CGIAR Centers are also working closely with advanced research institutions and other partners in order to be able to rapidly incorporate their continuous stream of useful innovations. Billions of dollars are being invested in private sector biotechnology research, and many of the important breakthroughs are driven by proprietary science. The CGIAR is seeking a new form of public-private partnership to ensure that the best of science can continue to be freely employed for solving the problems of the poor.

Improving Management of Natural Resources

A shift in thinking is underway in the agricultural sciences: from classical agronomy to ecological sciences and systems dynamics; from top-down to participatory approaches; and from factor-oriented management to integrated natural resource management. CGIAR programs have been organized to progressively incorporate better resource management practices into extended parts of ecosystems. Today, advanced methodologies for ecological analysis and modeling are facilitating even more comprehensive approaches.


To meet the food demands of the 21st Century, the CGIAR is helping to increase the productivity of rainfed regions of the tropics. This is a tremendous scientific and technological challenge, one that demands careful attention to natural resources management so that drought resistance and other plant characteristics are appropriately matched with soil and water conditions.

Our quest is motivated by a deep commitment to transform agricultural production in the world for the benefit of the poor and the environment. By helping the world to gain a better understanding of the complex interactions among physical, biological, and social systems, research can empower the international community to create a new agricultural regime that is development-oriented, sustainable, and fair. That is the challenge of today . . . and tomorrow.

— Ismail Serageldin, CGIAR Chairman

Strengthening Partnerships

The CGIAR Partnership benefits from synergies at many levels. It has built longstanding alliances with many NARS, and it will continue to boost NARS capacities in the next century. There is a particular need for strengthening capabilities in policy and natural resources management research. These must be balanced with more traditional requirements for scientific training of staff and basic management and institutional support.

The CGIAR will continue strong support for the Global Forum on Agricultural Research (GFAR), established in 1996 to provide an innovative mechanism through which all partners in agricultural research for the poor can work together on global priorities. Participation and partnering will likewise continue to be strengthened with the NGO, scientific, and business communities through structured interchange and enhanced dialogue. 



MEMBERSHIP: OPPORTUNITIES AND ADVANTAGES

The CGIAR is an unusual international enterprise because it has no constitution, no statutes, no regulations, and no membership laws. It reaches decisions by consensus, not by voting. The CGIAR's focus on science, commitment to excellence, and voluntary nature provide Members with numerous opportunities and advantages:

Development Partner: CGIAR is a partner that can assist investors in the pursuit of their development objectives. CGIAR's goals – food security, poverty reduction, sustainability, natural resource protection – match those of most international aid organizations and most developing country governments.

Member as Owner: CGIAR is a South-North partnership owned by its Members. It offers a unique international forum and a platform for rigorous policy dialogue. Membership also confers active participation in all CGIAR decision-making, including agenda and priority setting, and resource allocation. Membership provides leverage – a voice in setting the agenda of a US\$350 million enterprise.

Service Organization: CGIAR offers investors a complete range of program support services:

- Planning and priority-setting benefit from expert advice of the system's independent Technical Advisory Committee (TAC).
- Budget and resource allocation processes are guided by TAC and CGIAR's Finance Committee.
- Quality control is ensured through regular external reviews by independent groups of experts under the auspices of TAC and the Impact Assessment and Evaluation Group (IAEG).
- Accountability includes annual financial reports and fully audited accounts of each Center – with the participation of the Finance Committee, TAC

and CGIAR Secretariat. Members invest in a system with demonstrated reliability and transparency.

No Central Overhead: CGIAR does not exist as a corporate entity. A small secretariat, an independent TAC, an IAEG, and several committees facilitate the conduct of system business. Administrative and support costs are borne by the cosponsors and do not require financial support from Members.

Global Links: The CGIAR works in partnership with many organizations in North and South, in both the public and private sectors. Through its extensive networks, the CGIAR facilitates access to the best of science in many countries.

Learning Culture: The CGIAR hosts a deeply-embedded culture of assessment and learning which helps to ensure that cutting-edge science is brought directly to bear on food, poverty, and environmental problems. Some 58 industrial and developing countries, private foundations, and regional and international organizations are CGIAR Members, providing financial assistance and technical support, and participating in strategic decision-making. A host of other public and private organizations are working together with CGIAR Centers, as donors, research partners, and advisors.

Membership is open to countries and organizations sharing a commitment to agricultural research for the public domain, a willingness to participate in a common research agenda, and a readiness to invest through financial support.



CGIAR Members and Cosponsors

Countries:

Australia, Austria, Bangladesh, Belgium, Brazil, Canada, China, Colombia, Côte d'Ivoire, Denmark, Egypt, Finland, France, Germany, India, Indonesia, Iran, Ireland, Italy, Japan, Kenya, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Portugal, Romania, Russian Federation, South Africa, Spain, Sweden, Switzerland, Syria, Thailand, Uganda, United Kingdom, United States of America

Foundations:

Ford Foundation
Kellogg Foundation
Rockefeller Foundation

International and Regional Organizations:

African Development Bank
Arab Fund for Economic and Social Development
Asian Development Bank
European Commission
Food and Agriculture Organization (FAO) of the United Nations
Inter-American Development Bank
International Development Research Centre
International Fund for Agricultural Development
OPEC Fund for International Development
United Nations Development Programme (UNDP)
United Nations Environment Programme (UNEP)
World Bank

Cosponsors:

FAO
UNDP
UNEP
World Bank

WORLDWIDE SCIENTIFIC RECOGNITION



The CGIAR and its researchers have earned numerous scientific awards:

- Nobel Peace Prize
- King Baudouin International Development Prize
- International Inventors Award
- Japan Prize
- U.S. Presidential End Hunger Award
- World Food Prize
- Africa Prize for Leadership for the Sustainable End of Hunger
- International Soil Science Award
- Inter-American Science Prize
- Queen's Award for Forestry
- MacArthur Fellowship Award

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