

CONSULTATIVE GROUP ON
INTERNATIONAL AGRICULTURAL RESEARCH

SCIENCE IS DELIVERING RESULTS



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SCIENCE IS IMPROVING FOOD PRODUCTI

MORE FOOD. New high yielding and stress resistant crop varieties are increasing food availability. New Rices for Africa (NERICAs) and improved bean, cassava, pearl millet, rice, sorghum and wheat varieties are among the many products of agricultural research delivering benefits to poor farmers. NERICAs combine the high productivity of Asian and African varieties and are now planted on 100,000 hectares across Africa. Cassava is an important source of cash income for over 200 million people, and is an essential crop for food security across Africa and Latin America. New cassava varieties (Tropical Manioc Selection) are achieving on-farm yield gains of 40 percent in Ghana and Nigeria, even without the use of fertilizers.

BETTER FOOD. Agricultural research on new plant varieties is boosting food, nutrition health and income security across the developing world. Quality Protein Maize has twice the amount of essential amino acids such as lysine, tryptophan and is helping combat child malnutrition in 25 countries. Newly developed orange-fleshed sweetpotato varieties with enhanced beta-carotene are proving valuable in the fight against vitamin A deficiency, which afflicts some 3 million children under the age of five in sub-Saharan Africa. A new low-neurotoxin grass pea variety released in Ethiopia will help reduce the number of lathyrism cases, an irreversible paralysis of the lower limbs that occurs when grass pea is consumed as a major portion of the diet over a 3-4 month period.



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ADAPTING TO CLIMATE CHANGE. Science is delivering new crop varieties better adapted to environmental stresses including climate change, soil degradation and water scarcity. Improved drought-resistant maize varieties adapted for harsh ecologies of southern Africa are providing 30 percent higher yields and are today planted on more than 250,000 hectares. Cactus cultivation is becoming a multifaceted resource for poor farmers in the Maghreb region. It is a useful feed source for animals in desert margins, prevents wind erosion and helps stabilize sand dunes thereby mitigating desertification, and its fruits bring additional income to poor farmers.

FOOD SOURCES FOR THE FUTURE. In the next 50 years, food demand will double, as rising incomes support aspirations for more varied and nutritious diets, and higher consumption of meat and fish. New strains of tilapia that grow 70 percent more quickly than traditional breeds and new aquaculture techniques will help increase fish production in future. A trypanosomiasis epidemic is affecting hundreds of zebu cattle in Africa, but science-based prevention efforts are protecting farmer's wealth and status. Research on tackling livestock diseases is crucial as 70 percent of the world's poor raise livestock as part of their livelihood.



CGIAR CONTRIBUTIONS TO AGRICULTURAL DEVELOPMENT

The Consultative Group on International Agricultural Research (CGIAR) promotes science-based global efforts to alleviate poverty, especially in rural areas where most of the world's poor people live. Created in 1971, the CGIAR is a strategic alliance of countries, international and regional organizations, and private foundations supporting 15 international agricultural research Centers that work with national agricultural research systems, civil society organizations and the private sector. The alliance mobilizes agricultural and environmental science to reduce poverty, foster human well-being, promote agricultural growth and protect the environment.

Overall, without public investment in international agricultural research through the CGIAR,

- world food production would be 4-5 percent lower
- developing countries would produce 7-8 percent less food
- world food and feed grain prices would be 18-21 percent higher
- 13-15 million more children would be malnourished

For every \$1 invested in CGIAR research, \$9 worth of additional food is produced in developing countries, where it is needed most. The evidence is clear: agricultural growth alleviates poverty *and* hunger.



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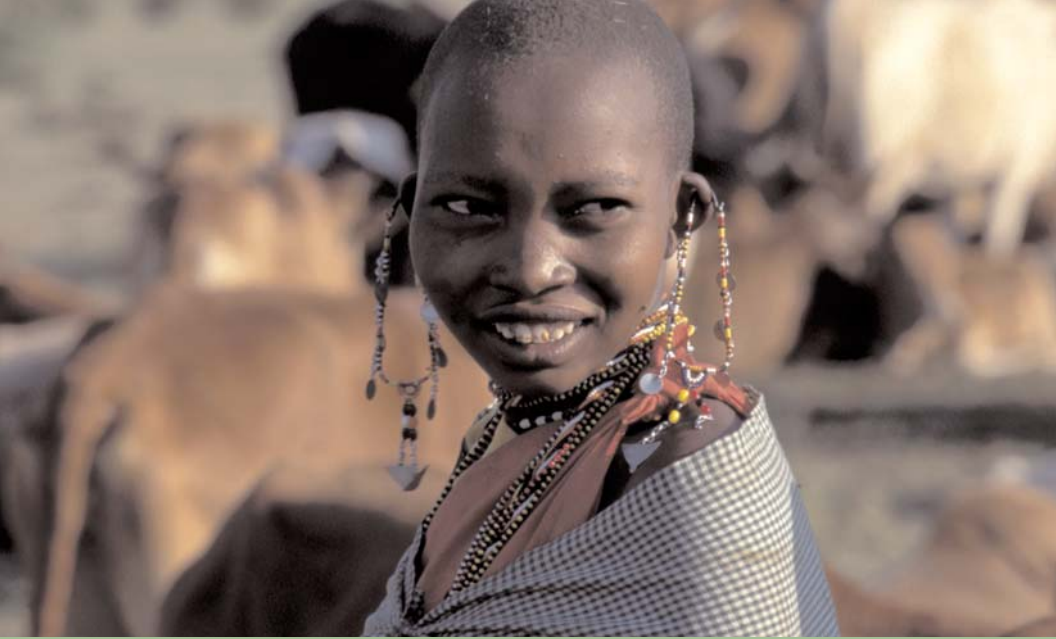
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SCIENCE IS PROTECTING THE ENVIRONMENT

AGROFORESTRY. Agroforestry makes a critical contribution to the livelihoods of small farmers across the world. Every year in Kenya, more farmers are investing in agroforestry as a means to improve nutrient-depleted soils, and planting tree legumes as fodder banks that provide protein supplements to dairy cattle. The result is an average benefit of \$150 per cow per year to the small-holder dairy sector.

FORESTRY. For hundreds of millions of the world's poor, forests and forest products are essential for daily survival and are an important safety net during drought or famine. Sustainable forest management ensures that forests continue to benefit poor people. Natural resource management research, developed in partnership with national governments, is leading to implementation of sustainable forest management strategies across Africa.



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WATER. Watershed programs are an important engine for agricultural growth and development in fragile and marginal, rainfed areas. A recent study of watershed programs revealed a 22 percent rate of return, increased employment, reduced soil loss, and increased crop intensity by 64 percent.

BIOPESTICIDES. The need for improved pest management and stricter pesticide use regulations has led to a demand for alternatives to chemical control. Science is delivering new solutions, especially in Africa, where locusts put the livelihoods of millions of African farmers at risk. Bio-research has developed an environmentally-friendly biopesticide “Green Muscle,” that uses a naturally occurring fungus strain indigenous to Africa which is deadly to locusts and grasshoppers but does not damage other insects, plants, animals, or people. Typically, a 70 to 100 percent effectiveness rate is obtained.



SCIENCE IS COLLABORATION

POLICIES. Knowledge brokering, widespread consultation and intensive research have identified key success stories which could form the basis of strategies for enhancing the impact of agricultural research. Improved maize varieties, pest resistant cassava, smallholder dairy projects, fodder shrubs, water management techniques that improve water use efficiency are all success stories that combine new and creative mechanisms and vibrant partnerships to meet the needs of the future.

CHALLENGE PROGRAMS. Challenge Programs are research for development programs that address the major global development challenges through expanded partnerships and strong collaboration. Four CGIAR Challenge Programs are currently being implemented

- “Generation” is unlocking crop genetic diversity through the application of comparative biological knowledge in 11 crops, in partnership with 14 institutions.
- “HarvestPlus” is breeding crops with improved micronutrient content in six staple crops involving over 40 institutions
- “Water and Food” is improving water productivity in agriculture in nine river basins, involving over 20 institutions.
- The “Sub-Saharan Africa Challenge Program” developed by a CGIAR partner, the Forum for Agricultural Research in Africa, is focusing on jumpstarting agricultural development in sub-Saharan Africa.



PARTNERSHIPS. Research designed to strengthen the capacity of national agricultural programs is an important component of partnerships designed to deliver global public goods. CGIAR has long recognized the importance of combining new knowledge and local expertise for achieving rural transformation. Currently, CGIAR researchers are working closely with national partners, agricultural research institutions, civil society organizations and farmers' groups to strengthen national science and technology capacities and ensure a steady stream of new knowledge that improves the lives and livelihoods of poor farmers around the world.

GENEBANKS. Eleven CGIAR genebanks together hold the world's largest collection of crop biodiversity, with over 600,000 samples. This precious resource makes breeding of improved crop varieties possible and provides a critical resource when national genebanks are destroyed by natural disasters and conflict. The genebanks hold one-tenth of the world's unique samples of major food crops, with the emphasis on conserving farmers' traditional varieties. Of the more than 1 million CGIAR samples exchanged over the past decade, over 80 percent went to universities and national agricultural research systems in developing countries.