




Pathways to Development Impact



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2014–2015
A Synthesis

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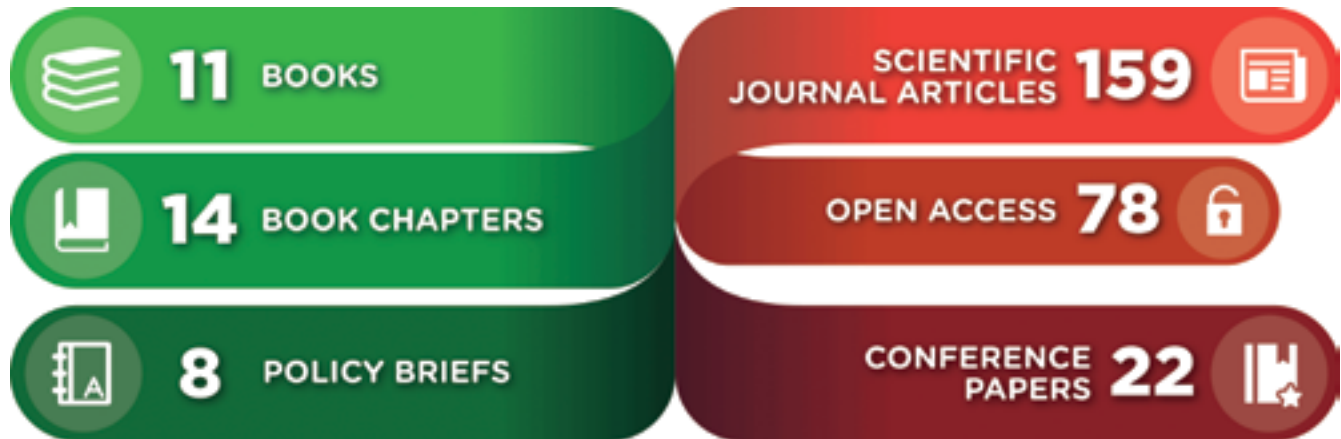


Contents

At a Glance	2
Message from the Board Chair and Director General	4
Our Stories	6
The African Grass that Came Home from America	7
Digging up the Truth on Dirt	7
Big Data: Farmers' New Ally in Fighting Climate Change	8
Scientific Foundations for Africa's First Water Fund	8
When Inclusive Business is Good Business	9
Sting Operation to Thwart Cassava Threat in Asia	9
National Snapshots of Climate-Smart Agriculture	10
Beans to the Rescue in Madagascar	10
Beans that Can Beat the Heat	11
Helping Haiti Climate Proof its Agriculture	11
Landscapes on the Road to Restoration	12
Lending a Hand with Transgenic Rice	12
CIAT and CGIAR	13
CCAFS: On Track for Impact	14
HarvestPlus: Modern Crop Science Meets Popular Culture	14
Building on Biodiversity	15
Donor Support	17
CIAT Today	18
Financial Highlights	18
Our People	19
Publications (Selection)	20

At a Glance

In 2014,
CIAT Generated
214 Publications



A New Strategy 2014-2020
to Build **an Eco-Efficient Future**

3 OBJECTIVES:

1 BOOST PRODUCTION AND NUTRITION



2 IMPROVE VALUE CHAINS



3 MAKE AGRICULTURE SUSTAINABLE & CLIMATE SMART



3 STRATEGIC INITIATIVES:



FOODLENS

SHARPENING THE FOCUS OF RESEARCH ON SUSTAINABLE FOOD SYSTEMS



ECOSYSTEM ACTION

RENEWING RURAL LANDSCAPES FOR IMPROVED FOOD SECURITY AND LIVELIHOODS



LIVESTOCKPLUS

FAST-TRACKING TROPICAL FORAGES FOR TWIN-WIN AGRICULTURAL SYSTEMS

CIAT is a Member of the CGIAR Consortium

A GLOBAL AGRICULTURAL
RESEARCH PARTNERSHIP
FOR A FOOD-SECURE FUTURE

CIAT leads the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and co-leads HarvestPlus

ALSO CONTRIBUTES
STRATEGICALLY TO 11 OTHER
CGIAR RESEARCH PROGRAMS:

- Agriculture for Nutrition and Health
- Dryland Systems
- Forests, Trees and Agroforestry
- Grain Legumes
- Humidtropics
- Livestock and Fish
- Managing and Sustaining Crop Collections
- Policies, Institutions and Markets
- GRiSP
- Roots, Tubers and Bananas
- Water, Land and Ecosystems

CIAT around the World

991 STAFF





Message from the Board Chair and Director General

All too often, strategic plans go on the shelf within months after they're completed. In contrast, CIAT's strategy for 2014–2020 went on the road over the last year, and in many ways, it went into effect. We shared the strategy widely with donors and partners, and engaged them in planning innovative initiatives that flow from it.

This audience included many distinguished visitors to CIAT, among them Darren Walker, president of the Ford Foundation, and a group of global science and industry leaders associated with the Latin America Conservation Council (LACC), which works in partnership with The Nature Conservancy (TNC). LACC held its fourth annual meeting at our headquarters in November.

In parallel with strategy outreach, we did some “inreach” as well – holding launch events at Center headquarters and our Asia regional hub in Hanoi, Vietnam, where CIAT is expanding its team, strengthening its partnerships, and widening the scope of its work. The launch events were followed by internal dialogues involving hundreds of staff to discuss each team's role in implementing the strategy.

Building on biodiversity

One strategic undertaking to which we're giving special attention involves the creation of a new plant genetic resources hub at Center headquarters in Colombia. For nearly 4 decades, CIAT's genebank has resided at the heart of our efforts to make tropical agriculture more productive and resilient.

By creating a new state-of-the-art facility, CIAT will be able to provide not only valuable seed but also digital genetic information that helps researchers harness the seed's development power. CIAT's host country, Colombia – considered the second most biodiverse country in the world, after Brazil – stands to gain significantly from the new genebank and is actively involved in its planning. The novel facility will conserve biodiversity and play a critical role in making Colombia's agriculture more competitive, sustainable, and climate smart – key aims of our collaboration with the country's Ministry of Agriculture and Rural Development (MADR) and Colombian Corporation of Agricultural Research (Corpoica).

The German government recently provided funding for infrastructure that facilitates genebank functions, and this augurs well for our campaign to build further support. The new hub will closely complement the efforts of the Global Crop Diversity Trust, whose executive director, Marie Haga, honored us with a visit this year.

Strategic initiatives in the making

Center scientists are pursuing several other avenues opened up by the strategy, including these forward-looking initiatives:

- **LivestockPlus** – Fast-tracking tropical forages for twin-win agricultural systems
- **Ecosystem Action** – Renewing rural landscapes for improved food security and livelihoods
- **FoodLens** – Sharpening the focus of research on sustainable food systems

All three form a critical part of CIAT's effort to make more robust contributions to the evolving CGIAR research agenda.

The initiatives now have well-defined research agendas and are rapidly gaining buy-in through new partnerships. A widely publicized study on changes in global food supplies over the last 50 years – which appeared in the *Proceedings of the National Academy of Sciences of the USA* (PNAS) – stimulated global interest in our perspectives on food systems. Sizable grants have already been approved for LivestockPlus and Ecosystem Action, one of which (from Germany's environmental ministry) supports development of sustainable land-use options for climate change adaptation and mitigation in the Colombian and Peruvian Amazon.

Standing room only

In recent months, developments on another major front – climate-smart agriculture (CSA) – have cleared the way for rapid progress toward CIAT's strategic objectives. Last October, Center experts in climate change presented profiles on CSA for seven countries across Latin America and the Caribbean to a standing-room-only audience at World Bank headquarters. The products prompted support for a similarly ambitious effort with African countries, to be conducted through the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), which CIAT leads.

This success came on the heels of another climate coup. CIAT scientists were named one of two winners of the Big Data Climate Challenge, which the United Nations awarded at its high-level Climate Summit, held last September in New York City. The award recognized our collaborative work with MADR and Colombia's National Rice Growers Association (Fedearroz) to help blunt the impacts of climate change in rice production through practical applications of big data tools.

Thinking big on land restoration

The other winner of the Big Data Climate Challenge was the Global Forest Watch system of the World Resources Institute (WRI), which has recently adopted CIAT's Terra-i tool for near real-time monitoring of land-use change. We worked with WRI to showcase this joint effort at the Global Landscapes Forum (GLF) 2014, a major event held in December at Lima, Peru, alongside the 20th Conference of the Parties to the UN Framework Convention on Climate Change, or COP20.

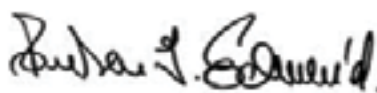
During GLF, CIAT also joined WRI and other partners in the high-level launch of Initiative 20×20, which aims to get the restoration of 20 million hectares of degraded land on track in Latin America by 2020. Attended by a half dozen agricultural and environmental ministers and an equal number of CEOs from private investment funds, the launch marked an auspicious beginning for this exciting effort.

The launch was followed by a lively discussion forum, which examined conditions for the success of efforts like Initiative 20×20 and the potential of such schemes for reversing land degradation in sub-Saharan Africa. Throughout 2015 – declared the International Year of Soils by the United Nations General Assembly – CIAT will work with its partners to heighten the profile of soil and ecosystem health.

Those and other advances highlighted in *CIAT Annual Report 2014-2015* represent key milestones along the path to eco-efficient agriculture. We invite all of our partners and donors to join us in making the arduous journey to this vital destination, which none of us can reach on our own.



Wanda Collins
Chair, Board of Trustees



Ruben G. Echeverría
Director General



Our Stories

The United Nations' expected launch of new Sustainable Development Goals (SDGs) by the end of 2015 will decisively settle the issue of what agricultural research must achieve in the years to come. Our challenge then will be to tackle the question of how we can reach these goals more quickly. As this collection of stories illustrates, CIAT scientists are betting on two kinds of vehicles to quicken the pace – first, seed or crop-based solutions that enhance the value and resilience of farm production, and, second, system solutions (in the form of data and information) that shape key decisions about agriculture and natural resources.

The African Grass that Came Home from America

More than 30,000 smallholder farmers in Kenya, Ethiopia, Tanzania, and Uganda have adopted the forage grass *Brachiaria* as part of the novel “push-pull” crop production technology. They are highly pleased with the dramatic boost in milk yields that results from feeding cattle with *Brachiaria* and also about its deterrent effect on stem borers attacking maize and sorghum.

Much research has shown that tropical forage grasses, including *Brachiaria*, can help overcome Africa’s feed shortage, which constrains milk and meat production. But progress in exploiting the grasses’ potential has been slow – until now. A few years ago, entomologists at the International Centre for Insect Physiology and Ecology (icipe), with headquarters in Nairobi, Kenya, determined that *Brachiaria* serves quite well to attract and help destroy stem borers and decided to incorporate the grass into the push-pull technology.

Brachiaria originated in Africa but was then improved in Latin America. Its drought tolerance makes the



latest version of push-pull “climate smart,” permitting its extension into drier areas. As a result, the stage is set for integrating tropical forages into mixed farming systems on a large scale to raise farm incomes and help livestock production keep pace with burgeoning food demand, while also improving soil fertility and reducing erosion.

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Digging up the Truth on Dirt

Through a new approach, researchers have obtained data that better reflect the true diversity of soils in the landscape around Lushoto, Tanzania, thus enabling them to advise farmers on changes needed to reduce erosion and boost soil fertility on their farms. Called the Land Degradation Surveillance Framework, this approach provides a biophysical baseline of soil and land health across the landscape, so variability can be mapped more efficiently than with conventional methods.

Soil health is measured on the basis of indicators, like soil organic carbon, which influence what crops can be grown, where, and how well. The more organic carbon there is in the soil, the healthier it is. A difference between 15 and 150 grams of carbon per kilogram of soil reflects the diversity of crops that can be grown in the soil – from vegetables, beans, and cassava to trees. But this may also show that current farming practices are reducing soil organic carbon and leading



to soil erosion. The framework thus makes it possible to identify opportunities for strategic land management interventions that can improve soil health and agricultural productivity.

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Big Data: Farmers' New Ally in Fighting Climate Change

In Colombia's Córdoba Department, 170 rice growers with 1,800 hectares followed a recommendation not to plant in one of two growing seasons and thus avoided losing money they would have spent to cover production costs, according to Patricia Guzmán, who manages the technical department of Fedearroz, the national rice growers association. The recommendation was based on climate simulations carried out by CIAT, which projected low yields under expected weather conditions, including lower rainfall and reduced solar radiation.

To come up with such conclusions, CIAT and Fedearroz have analyzed mounds of data from the latter's annual rice survey, harvest monitoring dataset, and treasure trove of experimental results on crop management. Researchers also tapped into weather data collected by Fedearroz and the Colombian Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM).

The findings coincide with results from many years of field research. But the difference is that the big data approach reached this conclusion in just 6 months.



Such novel solutions are exactly what Colombian rice farmers urgently need. In the last 5 years, yields of irrigated rice have declined from an average of 6 tons per hectare to 5 tons. This work received the Big Data Climate Challenge award from the United Nations Global Pulse in September 2014 for “harnessing big data, as a public good, for sustainable development.”

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Scientific Foundations for Africa's First Water Fund

In March 2015, CIAT joined The Nature Conservancy and other partners to launch the Tana-Nairobi Water Fund – the first of its kind in Africa. The Fund will safeguard one of Kenya's most productive agricultural areas and also protect a watershed that provides 60% of the country's energy production and water for more than 9.3 million people.

The Fund is a public-private scheme uniting big business, utilities, conservation groups, government, researchers, and farmers. It aims to increase farm productivity upstream, while improving water supplies and cutting the costs of hydropower and clean water for users downstream. In the long term, it is expected to generate US\$21.5 million benefits for Kenyan citizens, including farmers and businesses.

Research has played a major role in developing the Fund and is vital for ensuring it delivers the benefits it promises. With support from the CGIAR Research Program on Water, Land and Ecosystems (WLE),



CIAT uses its expertise in detecting and mapping land-use change to inform targeted investments.

Working in partnership with Kenya's Water and Resource Management Authority, CIAT will measure real-time water quality at specific points along the watershed. Center scientists will also inform decisions about land management options by measuring the effectiveness of different interventions, so they can be tailored to specific areas of the watershed.

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When Inclusive Business is Good Business

Usually, agribusinesses rely almost exclusively on a small number of large-scale suppliers and ignore the 85% of farms worldwide that are managed by smallholders. But Unilever, the world's third largest consumer goods company, has adopted a research-based methodology to foster business practices that benefit smallholder farmers. Its supply and distribution networks involve millions of smallholder farmers, distributors, and retailers around the world. In 2010 – the year it launched its Sustainable Living Plan – the company was already sourcing products from approximately 1.3 million smallholders globally, many of whom are women.

Unilever's Sustainable Living Plan helps farmers improve their agricultural practices and crop yields, and enhance their access to markets. The result is a win-win relationship, in which Unilever also benefits from higher yields, sustainably produced crops, and more secure supplies.

In support of this effort, Unilever is using the LINK Methodology, a participatory guide developed by CIAT and partners in 2007 for the purpose of fostering



inclusive trade relationships between producers and buyers. In 2015, Unilever will provide training in the LINK Methodology for the 300 to 500 of its 1,700 buyers who deal with smallholder farmers. Unilever, Oxfam, and the Sustainable Food Lab will release a public version of the guide, with the aim of influencing other food companies worldwide that engage with smallholders.

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Sting Operation to Thwart Cassava Threat in Asia

As part of a major regional effort to stamp out a pest devastating cassava in Southeast Asia, researchers released around 3,000 tiny parasitic wasps in Indonesia during September 2014. Their target was the cassava pink mealybug (*Phenacoccus manihoti*), which is capable of reducing cassava yields by up to 84%. Reported in Thailand during 2008, it spread to other countries of the region, devastating Indonesia's second major staple crop after rice, jeopardizing cassava-based livelihoods, food security, and the starch industry.

The tiny *Anagyrus lopezi* wasps were released by a team co-led by the Bogor Agricultural University in Indonesia with CIAT and the Food and Agriculture Organization (FAO) of the United Nations. According to researchers, the wasps pose no threat to humans, animals, or other insects, and feed only on cassava mealybug. Biological control eliminates the need to spray cassava fields with pesticides, which could have harmful environmental impacts. The wasps have already proven their effectiveness in sub-Saharan



Africa, where they averted a major food-security crisis in the 1980s.

CIAT together with national and international partners will continue developing more resilient cassava varieties and better crop and integrated pest management systems as well as quarantine measures to stem the spread of pests and diseases in the region.

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National Snapshots of Climate-Smart Agriculture

Climate experts at CIAT and the Tropical Agricultural Research and Higher Education Center (CATIE) have embarked on a new initiative, with support from the World Bank, to develop a series of national profiles on climate-smart agriculture (CSA). The first products of this partnership consist of nine profiles, covering seven countries (Argentina, Colombia, Costa Rica, El Salvador, Grenada, Mexico, and Peru) as well as the states of Chiapas and Sinaloa in Mexico.

“The idea is to help mainstream climate-smart agriculture by raising awareness and initiating dialogues about entry points for action by governments and financing institutions,” said Caitlin Corner-Doloff, a climate change expert at CIAT and one of the project leaders.

The complete set of profiles (available in Spanish and English) was presented last October to a standing-room-only audience at World Bank headquarters in Washington, D.C., USA. Now, the Bank has asked CIAT to prepare profiles with selected countries of sub-Saharan Africa (Kenya and Rwanda) and South



Asia (Sri Lanka) as well as additional countries in Latin America and the Caribbean (Nicaragua and Uruguay).

“These profiles show the huge power of linking research with operational work and represent a basis for informed and deliberate interaction with our counterparts,” explained Juergen Voegelé, the World Bank’s senior director for agriculture global practice.

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Beans to the Rescue in Madagascar

To combat chronic malnutrition and micronutrient deficiencies, a team led by Madagascar’s Office for National Nutrition (ONN) has kicked off an ambitious national program that involves, among other measures, a revival of the national primary school feeding system. Children receive a nutritious breakfast consisting of porridge composed of 40% bean flour, complemented with 28% maize flour, 17% soya flour, 15% sugar, and added vitamins and micronutrients.

Why beans? A 2013 CIAT study showed that beans are a particularly good option for school meals. The traditional Malagasy diet is dominated by rice. Beans complement this crop nutritionally and are widely grown in rotation with it across Madagascar. Initial results of a school pilot in the capital, Antananarivo, showed improvements in children’s weight as well as a substantial reduction in school absenteeism.

The improved bean variety (CAL98) used for the pilot is known for its high protein, iron, and zinc content,



which are sorely lacking in the Malagasy people’s diet. In the future, ONN and partners hope to replace CAL98 with a biofortified variety that possesses even higher iron and zinc content. Biofortified beans are the result of research carried out as part of the CGIAR HarvestPlus Program, in collaboration with the Pan-Africa Bean Research Alliance (PABRA), which is coordinated by CIAT.

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Beans that Can Beat the Heat

Alleviating fears that bean production will take a big hit from global warming, CIAT researchers have identified about 30 “elite” lines showing tolerance to temperatures 4 degrees Centigrade above the crop’s normal “comfort zone.” This research represents a major contribution to the CGIAR Research Programs on Grain Legumes and on Climate Change, Agriculture and Food Security (CCAFS).

Beans are highly sensitive to heat. Based on analysis using 19 global climate models, with current varieties, the area suited for bean production is expected to shrink up to 50% by 2050. With heat-tolerant beans, the reduction will be only 5%, even assuming conservatively that the tolerant beans can handle a temperature rise of only 3 degrees.

Many of the heat-tolerant lines resulted from crosses between common bean and tepary bean, a related species that is well adapted to arid conditions. “The discovery of heat-tolerant beans illustrates very well why it’s so important to safeguard and experiment with plant genetic diversity,” said Ruben Echeverría, CIAT’s director general.



Beans contribute to the daily diet of more than 400 million people across the tropics. They are a highly nutritious food, providing an inexpensive source of protein, fiber, complex carbohydrates, vitamins, and micronutrients. As such, beans strongly reinforce food and nutrition security among low-income consumers, while also reducing the risk of cardio-vascular disease and diabetes.

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Helping Haiti Climate Proof its Agriculture

Haiti’s agriculture, which was seriously damaged by the major earthquake that struck the country in 2010, is further threatened by the effects of climate change, according to a recent study by CIAT and Catholic Relief Services (CRS). The coffee sector is particularly vulnerable to changes in temperature and rainfall patterns, which are expected to reduce the area suitable for cultivating this crop.

The study recommends that coffee growers start adopting drought-tolerant varieties, irrigation, and shade management in areas that will lose suitability, mostly between 1,200 and 1,500 meters above sea level. Growers need to start diversifying production in areas below 1,200 meters, which will soon completely cease to be suitable for coffee.

Climate-resilient options include mango, cocoa, groundnut, sorghum, and yam. Haiti’s exports of mango generated US\$11 million in 2011. Cocoa is especially promising, because its economic prospects are good and it is grown in agroforestry systems that deliver environmental services (such as carbon



sequestration, biodiversity, and water storage) equivalent to those provided by coffee-based systems.

The impacts of climate change, if understood and addressed in a timely manner, can be turned into opportunities for the country’s agricultural sector. Based on its experience in helping climate proof agriculture in Colombia, CIAT stands ready to provide further support for Haiti’s farmers and other key decision makers.

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Landscapes on the Road to Restoration

CIAT joined the World Resources Institute (WRI), Tropical Agricultural Research and Higher Education Center (CATIE), and International Union for the Conservation of Nature (IUCN) in supporting a new country-led effort called Initiative 20×20. Aiming to have 20 million hectares of degraded land in Latin America and the Caribbean (LAC) on the road to restoration by 2020, the Initiative supports the Bonn Challenge, which seeks to restore 150 million hectares of land globally by 2020.

Initiative 20×20 was launched at the Global Landscapes Forum, held in December 2014 in Lima, Peru, alongside the United Nations Conference on Climate Change. Present at the event were ministers from a half dozen countries that have already made commitments to restore sizeable areas. Representatives from five private investment funds also attended, with plans to channel up to US\$365 million into the initiative.



The potential benefits of large-scale land restoration – such as reduced deforestation, increased agricultural productivity, and better rural livelihoods – are ample, but science is needed to help ensure investments meet these objectives. “CIAT is committed to supporting Initiative 20×20, because large-scale land restoration is critical for realizing this region’s potential as a global food basket and provider of ecosystem services,” said Ruben Echeverría, the Center’s director general.

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Lending a Hand with Transgenic Rice

CIAT scientists lent their support this year to demonstrating proof of concept for transgenic rice lines being developed for sub-Saharan Africa. Referred to as NEWEST rice, the lines contain three genes that together contribute to improved uptake of nitrogen from the soil, more efficient use of water, and increased tolerance to saline soils.

NEWEST is the result of a program begun in 2008 to further improve NERICA (New Rice for Africa) varieties bred by the Africa Rice Center. According to the Food and Agriculture Organization (FAO) of the United Nations, while African farmers produce 12.5 million tons of rice annually, there is still a deficit of 12 million tons, which countries import at a cost of US\$5.7 billion.

“In CIAT’s crop research, we resort to genetic transformation only when conventional breeding shows little promise for solving particular problems,” said Joe Tohme, director of the Center’s Agrobiodiversity Research Area. CIAT has contributed to this work by screening the improved lines in confined research



facilities at its headquarters in Colombia and by identifying the best performers in terms of nutrient-use efficiency for field trials in Africa. Our researchers will continue to evaluate NEWEST rice over the next 3 years in full compliance with Colombian biosafety regulations.

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CIAT and CGIAR

CIAT's research feeds into the collective agenda of CGIAR – a global partnership for a food-secure future. As one of the CGIAR Consortium's 15 center members, CIAT leads the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and shares in the coordination of HarvestPlus, which is a major part of the CGIAR Research Program on Agriculture for Nutrition and Health. Both programs demonstrated the power of innovative science and out-of-the-box thinking over the last year. CIAT contributed importantly to other CGIAR programs as well, opening diverse pathways to development impact.

CCAFS: On Track for Impact



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security



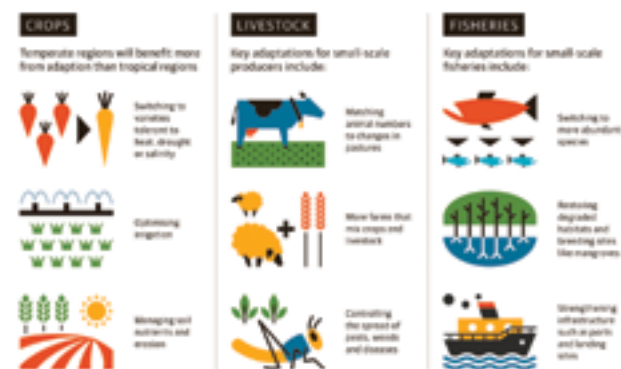
CCAFS underwent significant reorientation in 2014, sharpening its

focus on theories of change and impact pathways, and ensuring that all activities are linked to clear indicators of progress. The program is on track to reach ambitious outcome targets by the end of 2015, as highlighted by the following samples of achievements in 2014.

Climate change in the spotlight

In April 2014, the Intergovernmental Panel on Climate Change (IPCC) released its Fifth Assessment Report, which finds that climate change impacts are already evident in farming worldwide. CCAFS scientists played key roles both by providing scientific input for the report and by raising awareness of its findings and their implications for food and farming.

As part of a major public awareness effort, CCAFS produced a summary of IPCC findings on climate change impacts and adaptation options for agriculture. Published within days after release of IPCC's Working Group 2 report and accompanied by infographics that highlight key findings, the summary was downloaded over 18,000 times in 2014.



Source: CCAFS http://bit.ly/CCAFS_Info_Note_April_2014

In two major events co-hosted by CCAFS and partners, experts shared their views on the IPCC findings. An event on adaptation, held in London on 3 April, focused on agricultural growth, food security, and climate. An event on mitigation, held in Washington, D.C., on 16 April, identified opportunities for reducing agriculture's emissions, while also enhancing its resilience and strengthening food security. In relation to the IPCC report, CCAFS work was covered by several media outlets, including *The Guardian*, *Forbes.com*, *Deutsche Welle*, the *Hindu Business Line*, and *Xinhua News Agency*.

Global alliance on climate-smart agriculture

Building on a 4-year effort with partners, CCAFS helped bring about the Global Alliance on Climate-Smart Agriculture (GACSA), which was launched in parallel with the UN Secretary General's Climate Summit during September 2014. With more than 70 members from 20 countries, the Alliance brings together governments, civil society, and the private sector to share progress and lessons learned.

In addition to providing research outputs, CGIAR and CCAFS will play four distinct roles in the Alliance:

- (1) serving as a CSA standard bearer, (2) contributing to outreach, (3) expediting knowledge sharing, and (4) delivering expert advice. CGIAR pledged to bring CSA innovations to half a billion farmers over the next 15 years.

HarvestPlus: Modern Crop Science Meets Popular Culture



With more than 1 million farmers already growing nutrient-rich, biofortified crop varieties, the goal now is to reach more than 100 million people suffering from

micronutrient malnutrition by 2018. Fortunately, HarvestPlus – the CGIAR program dedicated to developing and promoting such varieties – has some good ideas about how to achieve this. Logically for a research organization, the program relies heavily on the power of modern crop science. But in an unusual twist, HarvestPlus has also recruited into its science-based program a full cast of characters from the world of popular culture.

It's showtime!

Last year, HarvestPlus joined up with top directors from Nollywood – Nigeria's growing film industry. The result was four movies that entertain and inform viewers about health and nutrition, including vitamin A cassava in the storyline. Released at the 11th Abuja International Film Festival in September 2014, the films reinforce the efforts of Nigeria's Ministry of Agriculture to promote vitamin A cassava under its ambitious Agricultural Transformation Agenda.

In Rwanda, top musicians – King James, Miss Jojo, Rideman, Tom Close, and Urban Boyz – promoted better nutrition and health through a catchy new music video released during late 2014. The song celebrates the nutritional benefits of high-iron beans now available in Rwanda, Democratic Republic of the Congo, and Uganda. Through a series of live performances, the campaign reached more than 30,000 people.

Science and technology behind the scenes

Meanwhile, HarvestPlus scientists and their partners are delivering superb performances as well. During 2014, six countries released 10 new nutrient-rich varieties of a half dozen different crops. Many such varieties have already been released in 27 countries,

and others are undergoing testing in 44 countries. To further boost the supply of nutritionally improved crops, HarvestPlus is mainstreaming genetic improvement for enhanced nutritional value, while also fine-tuning the systems that deliver new varieties to farmers.

Building on Biodiversity

Safeguarding biodiversity is essential for achieving food security. We need crop diversity to be preserved both in farmers' fields and in modern genebanks. And we need to make it available to all through an efficient global system, now and forever.

To help ensure long-term conservation and use of crop diversity for food security worldwide, CIAT will construct a new state-of-the-art genebank with LEED (Leadership in Energy and Environmental Design) certification at our headquarters near Cali, Colombia. The new genebank will aim to inspire innovation and international cooperation, not only providing seed and genetic data but also leveraging the power of information to drive transformative agricultural growth. Our goal is to have a new home for CIAT's bean, cassava, and tropical forages collections ready for inauguration on the occasion of CIAT's 50th anniversary in 2017.

“Much more than a seed museum, this new genebank will serve as a global knowledge hub for crop diversity, sharing the know-how and genetic resources that developing countries need for responding successfully to pressures like population growth, market shifts, and climate change.”

Cristián Samper, President and CEO
of the Wildlife Conservation Society

Crop diversity is rapidly disappearing as a result of urbanization and other pressures, and is also threatened by climate change. Once biodiversity is lost, it's gone forever. Since 1900, India has lost 90% of its rice varieties, and the USA has lost 90% of its fruit and vegetable varieties. While no one knows the total number of plant varieties that have disappeared, many can be found today only in genebanks like CIAT's.




Maintaining the greatest possible amount of crop diversity is critical for securing food supplies in the face of unprecedented demand and pressures. We need this diversity to ensure that nutritious food will be available at stable and affordable prices, without expanding agriculture's environmental footprint. The CIAT genebank is a key resource for meeting these challenges.

The new facility will be oriented to:



 **Conserving** genetic resources for sustainable food production

 **Discovering** new options for crop improvement

 **Educating** the public and next generation of scientists

Investment needed

US\$25 million

Including a
US\$4 million

endowment to support genebank operations and efforts to strengthen national scientific capacity

Currently in collection

67,000

samples of beans, cassava, wild species related to these crops, and tropical forages



Agrobiodiversity impacts

With traditional fodder sources failing during times of drought, high-quality forage grasses are giving hope to millions of small farmers in Rwanda and other countries of Eastern and Central Africa, where livestock production must be intensified in response to rising demand for milk and meat.

Using germplasm from CIAT and other CGIAR collections, Brazilian researchers and international partners have developed biofortified varieties of crops that include sweetpotato, squash, beans, and cassava, which farmers in Itaguaí are growing to supply nutritionally enriched foods for 13 pre-schools with about 8,000 students.

Cassava breeders in Asia have developed new varieties that are better adapted to a wide variety of growing conditions, are resistant to pests and diseases, and offer higher starch content, making them more attractive for industrial markets.



Support the Building on Biodiversity initiative

CIAT is reaching out to governments, foundations, the private sector, and individuals to establish a global genebank and knowledge hub for agrobiodiversity. We look forward to showing you around the iconic new home for humanity's crop diversity in 2017.

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Donor Support

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Top Funding Partners

- CGIAR Fund
- Australian Centre for International Agricultural Research (ACIAR)
- Bill & Melinda Gates Foundation, USA
- Department of Foreign Affairs, Trade and Development (DFATD), Canada
- European Commission (EC)
- Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Germany
- Ford Foundation, USA
- German Agency for International Cooperation (GIZ) GmbH, Federal Ministry for Economic Cooperation and Development (BMZ)
- Global Crop Diversity Trust, Germany
- International Fund for Agricultural Development (IFAD)
- Ministry of Agriculture and Rural Development (MADR), Colombia
- Swedish International Development Cooperation Agency (SIDA)
- Swiss Agency for Development and Cooperation (SDC)
- Syngenta Foundation for Sustainable Agriculture (SFSA), Switzerland
- United States Agency for International Development (USAID)

Other funding partners

- Alliance for a Green Revolution in Africa (AGRA), Kenya
- Administrative Department of Science, Technology, and Innovation (Colciencias), Colombia
- African Development Bank (AfDB)
- Biotechnology and Biological Sciences Research Council (BBSRC), UK
- Common Fund for Commodities (CFC), The Netherlands
- Directorate-General for Development Cooperation (DGD), Belgium
- Forum for Agricultural Research in Africa (FARA), Ghana
- Howard G. Buffett Foundation, USA
- Inter-American Development Bank (IDB)
- Ministry of Agriculture, Forestry, and Fisheries (MAFF), Japan
- Natural Environment Research Council (NERC), UK
- Norwegian Agency for Development Cooperation (NORAD)
- Regional Fund for Agricultural Technology (FONTAGRO)
- The Nippon Foundation, Japan
- United States Department of Agriculture (USDA)

- Autonomous Regional Corporation of Valle del Cauca (CVC), Colombia
- Catholic Relief Services (CRS), USA
- Food and Agriculture Organization (FAO) of the United Nations
- Government of Mexico
- Government of Peru
- Netherlands Development Organization (SNV)
- Seed and Plant Improvement Research Institute (SPII)
- The McKnight Foundation, USA
- University of Sheffield, UK, with funds from BBSRC DfID-BMGF

- African Agricultural Technology Foundation (AATF), Kenya
- Austrian Development Agency (ADA)
- Department for International Development (DFID), UK
- Japan International Research Center for Agricultural Sciences (JIRCAS)
- OPEC Fund for International Development (OFID), Austria
- Solidaridad, The Netherlands
- Swiss National Science Foundation (SNSF)
- The World Bank
- Unit for Rural Land-Use Planning (IPRA), Colombia
- World Resources Institute (WRI), USA

- Brazilian Agricultural Research Corporation (EMBRAPA)
- CARE International in Nicaragua

- Chinese Academy of Agricultural Science (CAAS)
- ensome, Nicaragua
- Fund for Financing the Agricultural Sector (FINAGRO), Colombia
- Future Earth, International Council for Science (ICSU), France
- French National Institute for Agricultural Research (INRA), France
- Ministry of Foreign Affairs (MOFA), Japan
- People's Republic of China
- Secretary of Agriculture and Rural Development of the Government of Antioquia (SADR), Colombia
- The Nature Conservancy, USA
- University of the Valley of Guatemala (UVG)
- United Nations Environment Programme (UNEP)

Private sector investors

- Agrigenetics, Inc., USA
- Colombian Agricultural Company Ltda. & Cia S.C.A. (COACOL)
- Dow AgroSciences, USA
- Colombia's National Petroleum Company (Ecopetrol)
- Ingredion Incorporated, USA
- Keurig Green Mountain, Inc., USA
- Syngenta, Switzerland

CIAT Today

Financial Highlights

- CIAT increased its revenues this year by 17% to US\$133 million. Almost \$8 million of this resulted from fully accounting for the activities of partners in HarvestPlus, as agreed with the International Food Policy Research Institute (IFPRI), which shares the coordination of this CGIAR initiative with CIAT. Our research execution reached \$129 million.
- Excluding the HarvestPlus adjustment, our revenues thus exceeded budget by 8%. A significant part of the surplus resulted from self-generated income (obtained through investments, fees, sale of assets, and farm operations), which amounted to \$2.2 million and accounted for nearly 60% of the surplus.
- CIAT managed the volatility of the Colombian peso by protecting the budget exchange rate with forward hedges. Our investments were at all times in full compliance with the investment policy approved by the Center's Board of Trustees.
- Partners in CCAFS, including CIAT, executed US\$45.4 million in research, representing 99% of CCAFS funds disbursed from CGIAR Fund windows 1 and 2. The program's total execution, including window 3 and bilateral funds, amounted to \$69.5 million, giving an execution rate of 93%. CCAFS received 50% of its window 1 and 2 funds during the last week of December 2014. CIAT, as lead center of CCAFS, disbursed funds to participating centers within a few days after receiving funds from the CGIAR Fund.
- CIAT made progress toward the goal of reporting its Financial Statements under International Financial Reporting Standards (IFRS), putting the Center on track to achieve IFRS compliance by the end of 2015.

Statement of Activity As of December 31, 2014 and 2013 (expressed in thousands of US\$)

	2014	2013
Windows 1 & 2	74,495	68,939
Window 3	7,735	6,106
Bilateral	48,730	37,513
Total Grant Revenue	130,960	112,558
Other Revenue and Gains	2,203	1,730
Total Revenue and Gains	133,163	114,288
Research Expenses	120,746	102,390
General and Administration	9,307	9,451
Other Expenses and Losses	(711)	0
Total Operating Expenses	129,342	111,841
Surplus (Deficit) for the year	3,821	2,447

Outlook for 2015

- Changes in the CGIAR Consortium Financing Plan for 2015 and 2016 have resulted in reductions of more than US\$12 million in our original budget (\$134 million). Efforts are underway to compensate for these reductions through new bilateral projects and measures to lower operating costs.
- Low prices for oil, coal, and other minerals are seriously undermining the Colombian economy. The government's budget will be further squeezed, if as expected, peace negotiations continue to progress, creating significant demand for post-conflict investment. Against this background, we are negotiating in collaboration with the Colombian Corporation of Agricultural Research (Corpoica) the extension of two large initiatives with the country's Ministry of Agriculture and Rural Development.
- Final plans and a detailed budget are expected to be available by the end of 2015 for the creation of a new state-of-the-art genebank.

Our People

CIAT has a total of 991 staff, including 558 professionals, of whom 371 are scientists; 803 are based in Colombia or elsewhere in Latin America and the Caribbean, while 157 are in sub-Saharan Africa, 28 in Asia, 2 in the USA, and 1 in Europe.



Publications (Selection)

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