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07 ANNUAL GENERAL MEETING CGIAR
BEIJING, CHINA

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CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

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Message from the Chair and Director

Dear Colleagues:

The 2007 Annual General Meeting, hosted by the government of the People's Republic of China and attracting more than 800 participants, will most likely be remembered as a landmark occasion for the CGIAR and its stakeholders.

Practically every session and presentation conveyed a sense of urgency about changing conditions that are rapidly redefining agriculture and raising serious new concerns about the future well-being of rural people and urban consumers. But our discussions also reflected the CGIAR's determination, with the support of Members and other stakeholders, to rise to new challenges, particularly global climate change and increasingly volatile grain markets.

Many of our discussions centered on the Facilitated Change Management Process begun earlier this year. This inclusive process, together with the upcoming External Review, represent valuable opportunities – ones we simply cannot afford to waste – for better preparing the CGIAR to help cope with a highly uncertain outlook for agriculture.

In this issue of e-*CGIAR News*, we are pleased to present a series of articles describing how AGM07 addressed the new world food situation that is emerging around us and how the diverse talents and capacities of CGIAR-supported scientists are being brought to bear on this and other challenges.

Clearly, robust partnerships are a key requirement for the success of our efforts. That's why it was especially fitting for us to organize AGM07 jointly with a major Asian partner, the Chinese Academy of Agricultural Sciences (CAAS). Our collaboration with institutions in this country has grown steadily in recent years, and this meeting marked the beginning of new efforts to broaden and strengthen our partnerships.

Another central prerequisite for dealing effectively with the new world of agriculture – as described in the recently launched *World Development Report: Agriculture for Development* – is creative and practical application of advanced science. For that reason, AGM07 featured a day-long Science Forum, which brought together CGIAR researchers, Members and other stakeholders. Participants identified a wide range of opportunities as well as concrete measures to better mobilize science from within and outside the CGIAR.

In closing, we wish you all the best for the holiday season and for the coming year. It promises to bring exciting new developments in our shared endeavor to make science-based solutions work for the poor.

Cordially,

Katherine Sierra	Ren Wang
CGIAR Chair	CGIAR Director

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Awards

CGIAR scientists were honored with several major awards recently, highlighting the CGIAR's reputation for scientific excellence in the world's major agricultural scientific fora. The awardees include:

Achim Dobermann , of IRRI, received the Werner Nelson Award for Diagnosis of Yield -Limiting Factors.

Braima James of IITA was elected Fellow of the Royal Entomological Society, UK. He joins an eminent group of Fellows of the Society which includes Darwin and Wallace to mention but two. James is Coordinator of the CGIAR Systemwide Program on Integrated Pest Management and is Officer-in-Charge of the IITA Benin Station.

David J. Mackill , Head of IRRI's Plant Breeding, Genetics, and Biotechnolgy Division, was made Fellow of the American Society of Agronomy.

Jorge Franco , **José Crossa**, **Marilyn Warburton**, and **Suketoshi Taba**, all CIMMYT scientists, were awarded the Crop Science C8 Outstanding Paper Award by the Crop Science Journal for their paper "Sampling strategies for conserving maize diversity when forming core subsets using genetic markers." Working with a smaller number of accessions facilitates breeding, testing, and germplasm bank use.

M.V.K. Sivakumar , formerly of ICRISAT and currently with WMO, was given the International Service in Agronomy Award.

Ravi Singh , CIMMYT Principal Scientist, was elected Fellow of the American Society of Agronomy at the Society's 2007 Annual Meeting. He was also recently awarded the International Service in Crop Science Award for his ongoing contributions to develop rust-resistant wheat. Singh has developed some of the highest-yielding and widely adapted CIMMYT-spring wheat germplasm that also features high levels of durable resistance to both leaf and yellow rusts.

Roland Buresh , IRRI Senior Scientist, and **John Ryan** of ICARDA received the International Soil Science Award and the Soil Science Distinguished Service Award, respectively from the Soil Science Society of America.

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AGM07: A Changing CGIAR for a Changing World

Far-reaching change was a central theme of the CGIAR's 2007 Annual General Meeting (AGM07), held in Beijing on December 3-6. The meeting was hosted by the government of the People's Republic of China and organized jointly with the Chinese Academy of Agricultural Sciences (CAAS). More than 800 CGIAR stakeholders attended.

Centers' and Members' Day

Ongoing reforms within the CGIAR, against the background of profound changes in world agriculture, were the focus of a plenary presentation on Centers' and Members' Day, made on behalf of the Alliance of the CGIAR Centers by Emile Frison, who chairs the Alliance Executive.

Opening Ceremony

The AGM07 Opening Ceremony also drew attention to the ominous and uncertain outlook for agriculture that is rapidly unfolding and to the need for more vigorous efforts to thwart negative impacts on the world's poor.

Because of the sheer size of China's economy and agriculture and because of its valuable experience in managing policy, institutional and technological change, this country's response to the new outlook for agriculture will figure importantly in the developing world. A message from China's Vice Premier Hui Liangyu, calling attention to the importance of technological advances, was delivered by Niu Dun, Vice Minister of Agriculture.

CGIAR Chair Katherine Sierra (photo above), in her opening speech, underlined the

value of the Centers' research partnerships with China and welcomed the opportunity to review with Chinese colleagues and other stakeholders shared progress and achievements in agricultural development.

As an aid to this process, the CGIAR Secretariat worked with the Marketing Group to prepare for distribution at AGM07 a book entitled *China: Voices for Sustainable Agriculture*. It presents a rich collection of stories describing the results and benefits of collaboration between CGIAR Centers and their Chinese partners.

Sierra also stressed the need to agree on steps that will greatly strengthen the CGIAR's response to the challenge of climate change. "Next week at the 13 th UN Climate Change Conference in Bali, Indonesia," she said, "I will offer delegates an overview of research already under way in the CGIAR Centers that is critical for helping cope with climate change. I hope to share with them as well the outcomes of our discussions on steps to greatly intensify this work."

During the AGM07 business meeting, many CGIAR Members expressed strong support for announcing this initiative at the Climate Change Conference in Bali, and some promised to convey this support to their delegations taking part in the conference. They also offered valuable advice about how the CGIAR should proceed in amplifying its climate change work, particularly in relation to the initiatives of other organizations.

In closing, Sierra urged stakeholders to take full advantage of the Facilitated Change Management Process under way since mid-2007 to formulate a new vision for the CGIAR and to identify concrete steps for realizing that vision. "Our partners expect nothing less than a more effective CGIAR – one that inspires them with hope and provides them with the means of coping with an uncertain, but manageable, future for agriculture."

CGIAR Director Ren Wang further reinforced this message in his update, calling on meeting participants to focus on finding ways of better positioning the CGIAR to confront new challenges. He signaled the importance of giving partnership, capacity strengthening and constructive alignment between Centers a prominent place in a revitalized CGIAR.

Sierra concluded the Opening Ceremony with an announcement that the Bill & Melinda Gates Foundation will fund a US$13 million initiative of the CGIAR Gender & Diversity Programme, aimed at significantly expanding the role of African women in the agricultural sciences. Through mentoring and related support, the new initiative – called the African Women in Agricultural Development (AWARD) Program – will bring women's capacities more fully to bear on the task of transforming Africa's agricultural production.

The announcement was followed by the screening of a deeply moving video recently developed by the Gender & Diversity Program, which should help inspire commitment to the important cause of the AWARD Program.

Science Forum

The stakeholder meeting at AGM07 was once again organized as a Science Forum. The event was designed to draw lessons learned and other implications from major scientific achievements of recent years, to examine new developments in various areas of advanced science and to determine how the CGIAR can further incorporate this science into its work for China and other developing countries.

The forum's opening session included four major presentations. These served to place the group discussions to follow within the framework of emerging trends in several key spheres: the world food situation, insights from 25 years of agricultural development in developing countries, important advances in China's agricultural production specifically and new perspectives and approaches from advanced science. Next, came three groups of more than a dozen parallel sessions dealing with scientific progress and opportunities both globally and in specific regions of the developing world.

After the Science Forum, theoretical neurobiologist William Calvin delivered the Sir John Crawford Memorial Lecture, a perennial highlight of the CGIAR annual meeting, at the Great Hall of the People. Entitled "The Great Use-It-or-Lose-It Intelligence Test," the lecture argued for greater political will and urgent action on many fronts, including agriculture, aimed at "retro-fitting" human civilization within the next 10 years to forestall truly catastrophic effects of climate change.

The lecture was followed by the CGIAR Science Awards ceremony, in which outstanding individuals and teams were recognized for work that demonstrates how science can benefit poor farmers and consumers.

Throughout AGM07, a science exhibition – the largest ever at an AGM – was open to the public, showcasing the work of the CGIAR Centers, Chinese agricultural research

institutions and other partner organizations.

Highlights of the 2-day Business Meeting, with emphasis on decisions about major issues, were as follows:

Change Management Process: The CGIAR expressed strong support for moving forward with the change management process, and it endorsed the Scoping Team's proposal for phase 2 of the process. There was a sense of enthusiasm and urgency about moving forward and taking advantage of the momentum created so far.

Funding Priority Research: The CGIAR endorsed the recommendation of the CGIAR Executive Council (ExCo) Ad Hoc Committee on Funding System Priorities, and it agreed to establish an ExCo Ad Hoc Committee to examine finance and funding matters in the CGIAR.

Independent Review of the CGIAR: The inception report of the panel was endorsed, with requests to have stronger emphasis on partnerships and to ensure that views are sought from Members and national agricultural research systems in the South. The CGIAR also expressed a need for the review to be more sharply focused and to be firm on time-deadlines, so as not to delay the change process and so that the review can contribute in a timely manner to the change process.

CGIAR Strategic Initiative on Climate Change: The CGIAR endorsed the Chair's proposal to call on the international community at the 13 th UN Climate Change Conference in Bali, Indonesia, to support the CGIAR's efforts to intensify climate change research and substantially increase resources dedicated to this vital work.

CGIAR Handling of External Program and Management Reviews: The CGIAR agreed to delegate responsibility for making decisions about External Reviews of Centers and Challenge Programs to ExCo to free up more time for strategic discussions at AGMs.

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China and the CGIAR: Strengthening the Partnership

AGM07 offered the CGIAR and its Chinese partners a valuable opportunity to review shared progress and achievements and to continue strengthening collaboration. Agricultural scientists in China began working with the international Centers even before the CGIAR's establishment in 1971. Since officially joining the CGIAR in 1984, China has provided influential leadership, and its counsel is held in high regard.

Participation and partnership

The CGIAR's main point of contact in China is the Chinese Academy of Agricultural Sciences (CAAS), the research arm of China's Ministry of Agriculture.

The current CGIAR Director, Ren Wang, was a Vice President of CAAS and the Deputy Director of Research at the International Rice Research Institute (IRRI) prior to taking up his current appointment. The CGIAR also works with the Chinese Academy of Science (CAS), the Chinese Academy of Engineering, the Chinese Academy of Forestry and the Chinese Academy of Fisheries.

Four Chinese experts have served on the Boards of Trustees of as many CGIAR-supported Centers: the International Potato Center (CIP), International Food Policy Research Institute (IFPRI), IRRI and the WorldFish Center.

Chinese scientists that have served on CGIAR Center Boards include Dr. Song Jian, former State Councillor and Vice Chairman of the National People's Political Consultative Council. He was a member of the IRRI Board for 6 years and currently serves on the CIP Board. China has been represented in the CGIAR Executive Council as well and thus contributed importantly to the recent CGIAR reform program.

Since China joined the CGIAR, eleven CGIAR Centers have undertaken cooperative activities with Chinese partners. Seven Centers maintain offices in China: Bioversity International, the International Maize and Wheat Improvement Center (CIMMYT), CIP, IFPRI, the International Livestock Research Institute (ILRI), IRRI and the WorldFish Center.

More than 50 Chinese institutions have formed partnerships with CGIAR Centers. Center scientists and their Chinese partners have co-operated in 70 completed and continuing projects. Major priority areas of collaboration have been genetic resources, crop and animal breeding, biotechnology (including biosafety), plant protection, natural resource management, policy research and food quality research.

In support of their Chinese partners, the CGIAR Centers have provided advanced training to more than 4,000 of the country's scientists, many of whom now hold leadership positions in China's agricultural research system or in international organizations. The country has been active in other knowledge-sharing efforts as well, hosting more than 40 international conferences and workshops, including forums dedicated to strengthening and sharpening the focus of the China-CGIAR relationship.

Collaborative research and its results

China is among the world's largest producers of major crops on which the CGIAR Centers conduct research – notably rice, wheat, maize, potato and sweet potato.

Collaborative international research on crops began in China during 1970, when IRRI provided lines from the rice genebank it maintains in support of global rice improvement. Using these materials, Chinese rice breeders were able to begin unlocking the potential of hybrid rice. With the opening of China in 1978, its relationship with the CGIAR was intensified through transfers of rice, wheat, maize and potato germplasm, together with advice and methods for germplasm

conservation.

The results of those early contributions of the 1970s can be seen today: an estimated 95 percent of hybrid rice varieties now grown in China have CGIAR parental material; and in 2004 China became the world's largest producer and consumer of potatoes and sweet potatoes.

'Cooperation-88', an aptly named potato developed by a CGIAR Center with Chinese partners, has contributed importantly to success with this crop. Virus-free tissue culture technology introduced later revolutionized potato seed production in China.

Altogether, China has bred more than 260 crop varieties containing material from CGIAR Centers.

By the early 1990s, the China-CGIAR partnership began to focus more on challenges related to natural resource management, with CGIAR Centers providing support in research on farming systems. By the end of the 1990s, the conflict between agriculture intensification and environmental sustainability had become pronounced, as the overuse of agrichemicals resulted in the degradation of farmland and contamination of groundwater. The need to develop approaches for sustainable management of water and forest resources also became clear.

In response, the CGIAR Centers helped establish networks of research sites to demonstrate resource-conserving technologies, such as zero-tillage, which reduces the use of inputs and water, while maintaining high crop yields, especially in unfavorable regions.

Diversifying agriculture is increasingly important to Chinese farmers, as they respond to growing pressures on the agricultural environment. CGIAR Centers are responding with research on options that range from alternative crops (such as legumes) and agroforestry species to fast-growing fish species like Tilapia.

New collaboration on livestock is contributing to improved understanding of Avian influenza and could provide the means to develop genetic resistance to this disease.

Technologies and approaches for adapting agriculture to climate change as well as tools for monitoring production systems now receive high priority.

Kathy Sierra, CGIAR Chair, visits the Chinese partner booths in the exhibition hall. On her right is Niu Dun, Vice Minister of Agriculture.

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Rising Food Prices: An Ominous Threat to the World's Poor of the World Food Situation

Income growth, climate change, high energy prices, globalization and urbanization are all converging to transform food production, markets and consumption, according to a report from the International Food Policy Research Institute (IFPRI). As a result of this new food equation, global demand and prices are likely to rise, threatening the livelihoods and nutrition of poor people in developing countries. The report, entitled "The World Food Situation: New Driving Forces and Required Actions," was presented by IFPRI Director General Joachim von Braun during the opening session of the AGM07 Science Forum.

Joachim von Braun, IFPRI Director General, addresses the audience during the opening session of the Science Forum at AGM07.

"Food prices have been steadily decreasing since the Green Revolution, but the days of falling food prices may be over," said von Braun. "Surging demand for feed, food and fuel have recently led to drastic price increases. Aggregate prices for grains rose from US$100/tonne in 2000 to $153 in 2006 and went even higher in 2007.

Moreover, they are not likely to fall in the foreseeable future. Global food consumption currently exceeds production, resulting in the depletion of global stocks of grains, such as wheat and rice, and increasing market uncertainty and price variability. Without a dramatic boost in agricultural productivity, prices will continue to increase.

Climate change will also have a negative impact on food production, compounding the challenge of meeting global food demand and potentially worsening hunger and malnutrition among the world's poorest people."

Consumer Demand

Many regions of the developing world, especially China and India, have seen high economic growth in recent years. Together with an expanding urban population, income growth is altering spending and consumer preferences. Global food demand is shifting from grains and other staple crops to processed foods and high-value agricultural products, such as vegetables, fruits and meat.

Although many small farmers would like to take advantage of the new opportunities that such products offer for increasing income, they face serious obstacles to entering markets, including a limited capacity to meet safety and quality standards

and produce large quantities for food processors and retailers.

Biofuels

Von Braun stressed that biofuels development to provide alternative energy sources and mitigate climate change offers both hope and threats. Part of the threat lies in the dramatic effect that increased biofuels production will likely have on the world food situation. According to the IFPRI report, poor people in developing countries will be adversely affected by both higher prices for food and greater volatility of food prices. Subsidies for biofuels, which are common, increase the negative impact on poor households, as they implicitly act as a tax on basic food.

Using state-of-the-art computer modeling, IFPRI has projected the possible price effects of biofuels for two potential scenarios up to the year 2020:

- Under scenario one, which is based on many countries' actual plans for biofuel investment and on the assumption that high-potential countries will expand their production of bioenergy, maize prices would increase by 26 percent and oilseed prices would rise by 18 percent.
- Under scenario two, which assumes that the production of biofuels would expand greatly, to twice the level prevailing under scenario one, maize prices would increase by 72 percent and oilseeds by 44 percent.

Under either scenario, rising crop prices would lead to decreases in food availability and calorie consumption in all regions of the world, with sub-Saharan Africa suffering the most. As biofuels become increasingly profitable, more land, water and capital will be diverted to their production, and the world will face more difficult trade-offs between food and fuel. Second-generation technologies may help cope with these tradeoffs, as they utilize biomass waste and in some cases put less pressure on land and water resources.

Agricultural Trade

In addition to examining the possible effects of biofuels production, IFPRI modeled the impact of supply and demand changes on cereal prices. It projects that up to 2015, prices could further increase by 10 to 20 percent, benefiting certain countries and population groups while harming others. China and almost all African countries, which are net importers of cereals, would suffer from the resulting high prices, but India, a net exporter would benefit. Overall, the majority of poor people, who live in households that are net buyers of food, will be worse off, and increased food prices will make it even more difficult for them to eat healthy, well-balanced diets.

More open global trade in agriculture would generally benefit developing countries. IFPRI research shows that opening up and facilitating market access between industrialized and developing countries would bring significant economic gains, although poverty would not be significantly reduced except in certain situations. Yet, negotiations within the World Trade Organization are stalled, so many countries are turning instead to bilateral or regional agreements, under which global food exports from developing countries have increased.

Climate Change

World agricultural output is projected to decrease significantly as a result of global warming, and this will have a much greater impact on developing countries than on industrialized nations. Africa is particularly vulnerable to climate change, because it depends much more on low-input, rainfed agriculture than does Asia or Latin America. Greater variability in rainfall will also impact livestock production, as it mostly depends on range- and grasslands, which are strongly affected by environmental shocks.

To reduce these risks requires increased investment in the improvement of agricultural productivity. It is also important to explore innovative insurance mechanisms for compensating rural communities and small farmers when rains fail.

Policy Recommendations

Von Braun cautioned against policy responses such as stopping exports, subsidizing food for the middle class and maintaining outdated production controls. Rather, g iven the various risks and challenges posed by the rapidly changing world food situation, he urged that policymakers take five immediate actions to mitigate the negative effects on poor households:

Developed countries should eliminate trade barriers and programs that set aside agricultural resources, thus facilitating more flexible responses to drastic changes in food prices. A world facing greater food scarcity needs to trade more, not less.

- Developing countries should invest more in rural infrastructure and market institutions to improve access to critical agricultural inputs, such as fertilizers, seeds and credit, which are key to enhancing productivity.
- To counteract rising food prices, national and international research organizations, including the CGIAR, must be able to invest more heavily in science and technology to increase agricultural production on a global level.
- Policymakers should put in place social protection measures that mitigate the nutritional risks associated with reduced food access, particularly for young children in the poorest households.
- Because poor people in developing countries are especially vulnerable to the risks associated with climate change, particularly as it relates to food security, policymakers should take agriculture and food issues into account when developing national and international agendas for coping with climate change.

A world facing increased food scarcity needs to trade more, not less.

“As the world food situation is rapidly redefined by new driving forces, the global community must give renewed attention to the role of agriculture, nutrition and health in development policy,” said von Braun. “Above all, policies must favor the world’s poorest people to ensure that they do not get left behind in the wake of overall economic growth and global progress.”

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- Developing countries should invest more in rural infrastructure and market institutions to improve access to critical agricultural inputs, such as fertilizers, seeds and credit, which are key to enhancing productivity.
- To counteract rising food prices, national and international research organizations, including the CGIAR, must be able to invest more heavily in science and technology to increase agricultural production on a global level.
- Policymakers should put in place social protection measures that mitigate the nutritional risks associated with reduced food access, particularly for young children in the poorest households.
- Because poor people in developing countries are especially vulnerable to the risks associated with climate change, particularly as it relates to food security, policymakers should take agriculture and food issues into account when developing national and international agendas for coping with climate change.

A world facing increased food scarcity needs to trade more, not less.

“As the world food situation is rapidly redefined by new driving forces, the global community must give renewed attention to the role of agriculture, nutrition and health in development policy,” said von Braun. “Above all, policies must favor the world’s poorest people to ensure that they do not get left behind in the wake of overall economic growth and global progress.”

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Science Forum 2007: Harnessing Scientific Advances for Sustainable Agriculture

The ability of the CGIAR to successfully confront the formidable combination of challenges outlined in various presentations at AGM07 will depend in large part on its ability to mobilize advanced science in collaboration with numerous partners. The CGIAR has already compiled a strong record of incorporating new tools and techniques into its problem-solving research, and this has enhanced the efficiency, effectiveness and impact of its work. But new possibilities are continuously emerging from various areas of advanced science, so now more than ever, the CGIAR must be well placed to take up new approaches and employ them strategically for pro-poor development.

The AGM07 Science Forum was organized with that imperative in mind through a joint effort by the CGIAR Secretatriat and Science Council, with valuable input from a broad-based advisory committee. Early on, the organizers defined three key objectives for the forum:

1. Reflect on major scientific achievements in fostering sustainable agriculture
2. Examine advances in science that hold significant promise for enhancing the effectiveness of agricultural research.
3. Explore means by which CGIAR researchers can further incorporate advanced science into their research, while offering new opportunities for colleagues in the wider scientific community to contribute to sustainable agriculture.

With the help of many colleagues in the CGIAR Centers and other research organizations, the organizers put together a comprehensive program around these objectives. The overall aim was to generate – through presentations, commentary and discussions, involving a cross-section of CGIAR researchers, Members and other stakeholders – a wealth of insights and concrete suggestions that could be considered by the AGM07 Business Meeting and then by the Science Council and others for subsequent follow-up.

Even before AGM07 took place, CGIAR researchers and others were able to share their views through an online survey, in which nearly a hundred people took part, and afterwards through an online discussion of survey results.

Opening Plenary Session

This session set the stage – a wide global stage – for the day's group discussions. It began with a presentation on alarming recent developments in the world food situation, delivered by Joachim von Braun, Director General of the CGIAR-supported International Food Policy Research Institute (IFPRI).

Then, World Bank advisor Derek Byerlee presented an overview of the World Bank's recently launched *World Development Report: Agriculture for Development*, with emphasis on highlights and implications for the CGIAR. Based on a synthesis of the best research results available, the report argues that agriculture urgently be given a more prominent place in the development agenda. It also signals both challenges in agriculture as well as opportunities for reducing poverty through sustainable agricultural growth in agriculture's "three worlds," which the report characterizes as agriculture-based, transforming and urbanized.

CAAS President Zhai Huqu next described the 10 most important recent advances in China's agricultural research and outlined new strategies for this research, together with priorities for international cooperation. Among the advances he cited were hybrid and super rice, transgenic Bt cotton, high-yielding and high-quality canola, improved cultivars of vegetables, effective measures for controlling and preventing major animal diseases, advances in the management of natural resources and in ecological restoration and innovative uses of agricultural information technology.

The session concluded with a presentation on "New Science for Agriculture: Challenges and Opportunities" by CGIAR Science Council member Hans Herren. Commenting on the International Assessment of Agricultural Science and Technology for Development (IAASTD), an international evaluation involving some 900 experts, Herren noted that agricultural knowledge, science and technology had registered many positive effects during recent decades. But he argued that there is still a series of "disconnects" – for example, between development and the environment as well as indigenous people and other marginalized groups – which must be addressed in agendas of research for development.

Theme 1: Science at Work for Sustainable Agriculture

Participants in four group discussions organized on a regional basis around this theme considered what have been the major scientific achievements in and beyond the CGIAR during recent years and what have been the key lessons learned as well as the implications of these lessons.

The full presentations and summaries of the commentary and discussions that addressed this and the two other themes will be made available in the coming weeks on the CGIAR Web site (www.cgiar.org).

Suffice it to say here that across different regions a number of common concerns emerged. One is the need for more integrated or holistic approaches to multidisciplinary, collaborative research for development. Another is the importance of making the larger context for agricultural development more favorable through appropriate policy development. And a third is the importance of rebuilding human capital (much eroded through sheer neglect in recent years), which is essential for harnessing knowledge from emerging fields, such as biotechnology, bioenergy, supply chain management and information and communications technology (ICTs). All of these concerns figured prominently in discussions on Asia and the Pacitifc.

There were also fairly obvious regional differences in the output of the four groups. Participants in the session on Central and West Asia and North Africa, for example, emphasized the severe natural resource constraints of their region, while colleagues from Latin America and the Caribbean stressed more the importance of addressing the needs of people and regions left behind by the region's development. The sub-Saharan Africa group called for renewed efforts to build on recent breakthroughs in agriculture through massive scaling out of successful technological innovations.

Theme 2: Advanced Science to Enhance Research Effectiveness

Participants in the four sessions addressing this theme on the basis of broad areas of advanced science asked what developments in various fields are needed to better address challenges to achieving sustainable agriculture.

As one might expect, these groups generated a long list of possibilities, making it clear that prioritization will be a key to stronger mobilization of advanced science in the CGIAR. Here we can provide only a sampling of the potentially powerful tools, techniques and approaches that are quickly evolving.

The discussion of molecular biology, for example, centered mainly on two possibilities. One involves the creation of a public genetic research platform that consists of three main elements required for crop improvement: (1) genetic stocks of international value, such as mapping populations, (2) effective biological evaluation or phenotyping and (3) comparative biology between species. A second option entails the use of DNA barcoding for quick, efficient and accurate identification of pest

species, which is essential for their effective control.

The agroecology group identified various opportunities, including payment for ecosystem services, new approaches such as complex systems thinking, novel uses of below- ground biodiversity, integrated extension methods and development applications for ICTs. In exploiting these opportunities, participants emphasized that the CGIAR must act in ways that are systematic, transversal (cutting across scales and disciplines) and participatory.

Participants in the session on social sciences underlined the importance of better understanding the context of technology development to enhance impact. This can be accomplished through analysis of gender and power relations, governance structures, patterns of decentralization, institutional innovations and other features of the rural sector. In other words, CGIAR scientists need ways to better understand the communities in which they and their partners work. This group also insisted on the need to devise new approaches for understanding intersectoral relationships, for example, between agriculture and health, education, and social mobilization.

Theme 3: Strategies for Harnessing Advanced Science

Finally, participants in five sessions organized around topics related to this theme identified important components of strategies for better mobilizing science.

Inputs from one session under theme 2 and several sessions under theme 3 are still being synthesized, so all we can provide here is a sampling of the comments.

Group discussion on research management, for example, indicated the need for a new “equation” in agricultural research that will permit a significant reduction in the transaction costs of partnerships for mobilizing advanced science. The group also took up a key concern from theme 3 discussions, namely the need to strengthen human resources, particularly in the face of new and more complex challenges.

In the discussion on resource mobilization, participants highlighted the importance of further encouraging the more advanced developing countries that benefit from CGIAR research to invest more in international research.

The session on partnerships concluded that to find long-term solutions for complex problems in a rapidly changing context requires more innovative research approaches. This, in turn, means that the CGIAR must leave behind traditional partnership models and embrace more inclusive partnerships, involving a broader spectrum of actors and stakeholders.

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Announcing an Unprecedented Effort to Tap the Expertise of African Women in the Agricultural Sciences

Confronting the disparity between the role of African women in farming and their limited presence in the agricultural sciences, the CGIAR Gender & Diversity Program will embark on an unprecedented US$13 million initiative to help advance the careers of at least 360 African women scientists. Funded by the Bill & Melinda Gates Foundation, the initiative will reach women in Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Tanzania, Uganda and Zambia.

CGIAR President Kathy Sierra announced the new effort during the opening ceremony of AGM07. “The CGIAR started the G&D Program to heighten the role of women in international agricultural research and help them advance their careers as scientists. We also wanted to ensure that the results of our work are reaching African women,” she said. “This new commitment will greatly further those goals.”

The African Women in Agricultural Research and Development (AWARD) Program is being funded with a 4-year grant. The grant represents the Bill & Melinda Gates Foundation’s belief in the importance of engaging women at every level in agricultural development. Today, women farmers produce 60 to 80 percent of Africa’s food supply. Yet, women comprise less than 20 percent of agricultural researchers.

“We cannot fight hunger and poverty in sub-Saharan Africa, unless women have a strong voice not just on the farm, but in the lab,” said Vicki Wilde, Head of the Gender & Diversity Program. “It is urgent that we increase the number of African women in agricultural research. We’re thrilled that the Gates Foundation is funding our work in this area.”

“Women bear much of the responsibility for cultivating crops in Africa, and they face challenging and changing conditions,” said Rajiv Shah, Director of Agricultural Development for the Bill & Melinda Gates Foundation. “African women scientists can help bring practical, sustainable improvements to the African farm sector, so smallholder farmers – most of whom are women – can build better lives for themselves and their families.”

The AWARD Program will address many of the barriers – including a lack of role models and mentors as well as institutional biases – that in the past have prevented African women from playing a more active role in agricultural research.

“It is a plain fact that the young woman scientist continues to face a scary and tormenting situation in deciding whether she should pursue her career {as a scientist} or maintain her family,” said Miriam G Kinyua, Associate Professor of Agriculture at Kenya’s Moi University. “I believe it should not be so. I believe that with the right balance, she can succeed in both.”

While other programs provide academic support, AWARD is different. AWARD nourishes the African talent pool with acareer development seriesdesigned to strengthen both science and leadership skills of women in agricultural research at three critical career junctures – upon completion of their BSc, MSc and PhD degrees.

Specifically, the program seeks to achieve a:

- 25 percent increase in African women with BSc degrees participating as members of research teams in at least 20 agricultural institutions in sub-Saharan Africa;
- 50 percent increase in African women with masters degrees managing research teams and producing improved farm technologies at these institutions;
- 50 percent increase in African women PhDs serving in influential leadership roles and as role models and mentors to younger women;
- Significant increase in the number of African girls and young women inspired to pursue careers in agricultural research and development; and
- Significant increase in the number of men and women aware of the importance of women's voices and contributions to agriculture in Africa.

Many of the strategies to be employed in the AWARD initiative were first developed in two smaller, pilot programs administered by the Gender & Diversity Program in partnership with the Rockefeller Foundation, the US Agency for International Development (USAID) and the Syngenta Foundation for Sustainable Agriculture. Launched in 2005, these efforts have provided career-boosting support for 75 women agricultural researchers in Africa. But there is a clear need for expansion, as qualified applicants for the fellowships have far exceeded available positions.

One lesson from the pilot programs is that mentoring is critical to cultivating a strong cadre of women scientists. Each fellow selected to participate in the AWARD initiative will be assigned a senior scientist to serve as her mentor to guide her research and training. During the second year of her fellowship, each AWARD woman, in turn, will mentor a more junior woman from her organization.

"I strongly feel this mentoring program has a multiplier effect, and its impacts are definitely changing lives and specifically the lives of women," said Jenipher Bisikwa, a Ugandan participant in one of the pilot fellowship programs. "The Gender & Diversity Program is a nurturing powerhouse."

The mentoring program also is intended to get men involved. While they are not eligible for AWARD fellowships, men are being encouraged to become mentors. In exchange, they will be offered the opportunity to participate in special AWARD events, such as courses that teach leadership skills, science writing and proposal writing.

Fellows will also have access to a range of resources – including an electronic science library – to ensure they have maximum opportunity to make a long-term commitment to agricultural research. Today, the proportion of women studying in the agricultural sciences in Africa steadily declines as students move from undergraduate to masters and PhD programs. To counter this "leaky pipeline" problem, the AWARD program is providing a variety of resources to encourage women to stick with their research pursuits.

For example, each fellow gets subscriptions to online science journals and, as they get their research papers published, the funds to attend and present at scientific conferences. Fellows also will be offered internships in a variety of research settings, including the CGIAR Centers and a number of universities in Africa.

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CGIAR Science Awards: Recognizing Excellence in Research for Sustainable Development

Six awards were conferred on outstanding scientists and research teams at AGM07in a ceremony held at the magnificent Great Hall of the People in Beijing. The awards bring international recognition to research that shows particularly well how science can help poor farmers and consumers in the face of increasing pressure on agricultural systems and natural resources.

“International agricultural research has shown again and again how science-based innovations can help combat hunger, poverty and environmental degradation in the developing world. Today, we’re recognizing a group of scientists who are profoundly committed to this goal and have shown extraordinary persistence and ingenuity in contributing to it,” said CGIAR Chair Katherine Sierra.

Winners of both the science and communications awards were available at a lunchtime meeting held during the AGM07 Science Forum to share lessons from their scientific careers and achievements.

Among the winners were the creators of **ReefBase**, the most sophisticated and comprehensive information-management system available on the world’s 10,000 coral reefs. Developed by a team of marine biologists and information technology experts at the WorldFish Center (www.worldfish.org), ReefBase proved critical after the tsunami of December 26, 2004, hit Southeast Asia in helping scientists and relief workers assess the damage to coral reefs and to the coastal communities whose livelihoods depend on them. The multidisciplinary minders of ReefBase were named **Outstanding Scientific Support Team** for keeping this valuable resource relevant and up to date with information from 120 different countries, including 25,000 publications, 4,000 photographs and contact details for 3,500 coral reef experts. Jamie Oliver and Moi Khim Tan received the award on behalf of the team.

from left: Kathy Sierra, Moi Khim Tan, Jamie Oliver and Zhai Huqu, CAAS President.

WorldFish scientists consider their response to the 2004 and subsequent tsunamis as a kind of “dress rehearsal” for disasters that lie ahead, as climate change unfolds. Researchers expect that ReefBase will prove more useful than ever for helping researchers, conservationists and development specialists monitor the impacts on coral reefs and make sound decisions about their management for the benefit of poor coastal communities.

Another key asset in developing countries’ struggle to cope with natural disasters is the Sub1A gene, which confers flooding tolerance on rice, as documented in the CGIAR’s **Outstanding Scientific Article.** Published in *Nature* during August 2006,

the article, with ten co-authors, including four from the International Rice Research Institute (www.irri.org), describes how the gene was introduced into a popular rice variety (Swarna), grown on about 6 million hectares in India and Bangladesh. When completely submerged under water for 12 to 18 days, the tolerant version of the variety (Swarna-Sub1) yields two to three times more grain than its nontolerant original. The Sub1A genetic sequence has also proved useful in searching rice germplasm collections for further flood-tolerance genes. David Mackill and Kenong Xu received the award on behalf of the co-authors.

from left: Kathy Sierry, David Mackill, Xu Kenong and Rudy Rabbinge

An especially rich source of genes for rice improvement consists of 22 wild species belonging to the rice genus (*Oryza*). Practically nobody knows this resource better than IRRI's **Darshan S. Brar**, recipient of the CGIAR's **Outstanding Scientist Award**. Brar has spent the better part of his career as a plant breeder finding ways to transfer useful genes from these wild species – for disease and insect resistance as well as tolerance to drought and acidic soils – into cultivated rice through an approach referred to as "wide crossing." To overcome troublesome reproductive barriers between species and thus uncover hidden genetic variability, Brar and his team have resorted to a variety of tools – including tissue culture and molecular markers – for creating cross-species breeding lines. Serving as "bridges" for the introduction of valuable traits from wild to domesticated rice, seven of these lines have been released to farmers as commercial varieties, including one (AS966) that is now sown to 100,000 hectares on moderately acid soils in Vietnam.

from left: He Kang, Kathy Sierra, Darshan Brar, and Niu Dun

All of the research recognized with CGIAR Science Awards features partnerships with diverse institutions, which Sierra referred to as "a key prerequisite for technological innovation, especially in the face of complex challenges."

But one group was singled out for its especially inclusive and novel approach to collaboration. This was the Latin American and Caribbean Consortium to Support Cassava Research and Development (CLAYUCA, its Spanish acronym), winner of the **Outstanding Partnership Award**. Set up by the International Center for Tropical Agriculture (CIAT) in 1999, CLAYUCA (www.clayuca.org) is an alliance of 33 public and private organizations in 13 countries. They jointly plan and finance research for the development of cassava (*yuca* in Spanish), a starchy root crop that provides food and increasingly serves as a source of animal feed and industrial raw material in tropical America. The consortium has greatly expanded members' access to technologies for improving cassava production and processing. Among its current initiatives is the development of an alternative, decentralized approach for producing ethanol from cassava, with the active participation of small farmers. Value-added products derived from the residues are used in animal feed and fertilizers. CLAYUCA Executive Director Bernardo Ospina received the award on behalf of the partnership.

from left: Kathy Sierry, Bernardo Ospina, and Zhai Huqu

Another way in which agricultural researchers add value to staple crops is through improvement in the quality of grain and other products. In China, for example, better processing quality for noodle production is highly important to the country's wheat milling industry and translates into benefits for both farmers and consumers. In recognition of critical contributions to the development of three high-quality wheat cultivars, the Joint Wheat Quality Team of the Shandong Academy of Agricultural Science (SAAS) and Chinese Academy of Agricultural Science (CAAS) received the CGIAR's new **Regional Award for Outstanding Agricultural Technology, Asia-Pacific Region** (Zhonghu Heof CAAS and Zhendong Zhaoof SAASreceived the award on behalf of the team). The pedigrees of two of these varieties include lines provided by the International Maize and Wheat Improvement Center (CIMMYT). The cumulative economic returns from the three new wheat varieties for Chinese farmers – estimated at US$411 million – include $101 million in premiums for higher processing quality.

from left: Kathy Sierra, He Zhonghu, Zhao Zhengdong, Niu Dun and Rudy Rabbinge

The newest variety – Jimai 20 – was sown on 1.3 million hectares in Shandong and three other provinces in 2006. In addition, it is the only Chinese cultivar showing resistance to a new African strain of the wheat stem rust pathogen and could therefore serve as a parent in CIMMYT's international campaign to develop resistant varieties. The new rust strain, which was recently found in Yemen and is expected to spread across Asia, poses a dire threat to the region's wheat production.

Partly to strengthen joint efforts in preparation for this threat, CAAS and CIMMYT signed an agreement during AGM07 for a 3-year joint wheat breeding initiative worth US$1 million per year. In addition to focusing on resistance to major diseases, like stem rust, researchers will develop "climate-resilient" varieties tolerant to heat and drought.

A key aspect of food quality on which many CGIAR scientists now focus is nutritional balance. Specifically, they are engaged in a major effort to increase staple crops' content of micronutrients, such as zinc and iron, thus complementing other approaches to combat widespread micronutrient malnutrition, especially in Africa. Rapid progress in this work depends in part on the availability of cheap but reliable methods for quickly diagnosing key nutritional traits, thus permitting efficient, large-scale screening of grain samples. For her extraordinary achievements in this area, biologist **Natalia Palacios** of CIMMYT (www.cimmyt.org), based in Mexico, was named **Promising Young Scientist**. One of her innovations made it possible to handle more than twice as many samples per day as before, doubling the number of maize varieties undergoing improvement for content of pro-Vitamin A. Palacios has also shown exceptional dedication to strengthening the capacity of national grain quality laboratories in Africa and Latin America.

from left: Kathy Sierry, Natalia Palacios, He Kang, and Niu Dun

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Communications Awards: Extending the Reach of Research Results

In addition to bringing recognition to outstanding scientists and research teams, AGM07 called attention to the talents of communications professionals who have excelled in conveying science-based knowledge to the public.

In a joint award, the Chinese Academy of Agricultural Sciences (CAAS) and the CGIAR recognized senior journalist **Jianke Jiang** of the *People's Daily* with the **Award for Excellence in Journalism in China**. Jianke has published more than 1,000 articles on agricultural research, contributing importantly to the transfer of new technologies. He has also written four books on the role of the media in agricultural development. In addition to his work as a journalist, Jianke is Honorary Professor of Communications at CAAS and the Chinese Agricultural University.

from left: Jianke Jian, Kathy Sierra, and Jim Godfrey

Two new honors – the **COM+ Communications Awards** – were established this year by the Alliance of Communicators for Sustainable Development (COM+). This is a partnership of international organizations, media agencies and communications professionals committed to advancing sustainable development through communications. The CGIAR is among its founding partners and inaugurated the awards this year. Other members are the BBC World Service Trust, TVE-Earth Report, United Nations Environment Programme (UNEP), World Bank and World Business Council for Sustainable Development.

One of the two awards recognizes a campaign that communicates science for people and the planet, while the other is for an outstanding climate change campaign.

The first award, conferred during AGM07 along with the CGIAR Science Awards, went to the creators of a communications campaign called the **Environmental Soap Opera for Rural Vietnam**. It was carried out by the International Rice Research Institute (IRRI), in collaboration with Visayas State University in the Philippines and with the Ministry of Agriculture and Rural Development and Voice of Ho Chi Minh City in Vietnam. Kong Luen Hong of IRRI received the award on behalf of campaign partners.

from left: Kathy Sierra, Kong Luen Hong, and Emile Frison

By means of a radio soap opera, the campaign reached approximately 10 million rural households in Vietnam, providing them with reliable information and motivating them to reduce environmental degradation through reduced and more efficient use of fertilizer, pesticides and water. One result was a 31 percent decrease in insecticide sprays.

The second award, conferred at the 13 th UN Climate Change Conference in Bali, Indonesia, immediately after AGM07, recognized an innovative initiative of the Beijing-based Shanshui Center for Nature and Society, which it carried out in partnership with Conservation International (CI-Shanshui).

Entitled **"For Our Natural Splendor, Gateway to Music,"** the campaign turned a popular summer music series held at the Forbidden City Concert Hall in Beijing into an opportunity for raising public awareness about climate change. The 60 concerts making up the series were "carbon neutral," a first in China. The 126 tons of carbon dioxide emitted through use of electricity and local and international travel to the concerts was offset by planting 1,132 camphor trees in southwest China. This campaign forms part of CI-Shanshui's comprehensive Green Olympics Campaign, which aims to spread the spirit of a green Olympics to the general public.

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Crawford Lecture: Retrofitting Civilization for Climate Change

The 2007 Sir John Crawford Memorial Lecture was presented in an extraordinary setting at the Great Hall of the People in Beijing by theoretical neurobiologist Dr. William Calvin, Affiliate Professor of Psychiatry and Behavior Sciences at the University of Washington School of Medicine in Seattle.

Dr. William Calvin delivers the 2008 Crawford Lecture

The Crawford Lecture, a highlight of the CGIAR Annual General Meeting, is named in honor of the Australian Sir John Crawford, a passionate supporter of international agricultural research for development, a founding father of the CGIAR and the first chair of its Technical Advisory Committee.

The lecture is sponsored by the Australian government and seeks to challenge the agricultural research and development community to think outside the proverbial box. This year's presentation, entitled "The Great Use-it-or-lose-it Intelligence Test," provided plenty of food for thought as the CGIAR, its members and partners seek more effective ways to confront major global challenges, such as climate change, biodiversity loss and rural poverty.

Calvin explained humanity's tardiness in taking climate change seriously as "the status quo bias." Part of the problem is that most climate scientists are trained to think in terms of certainty and understatement, not in terms of risk and its management. Another is that politicians remain unwilling to make hard decisions.

These factors, he believes, have left us with a very conservative explanation of what humanity is now facing and what must be done to reduce the impacts of climate instability.

Following a sobering description of what may well be in store without brave action on climate change, Calvin's optimistic conclusion was that humanity may, in fact, find the intellectual depth and leadership to make the changes now needed. After all, he pointed out, within the 50,000-year timeframe of the modern mind, periods of enlightenment have been linked to periods of severe climate change or instability.

Calvin highlighted a number of suggestions for both the agricultural and energy sectors in fighting the climate change battle.

"Certainly, many of the opportunities to fix our global climate lie in the agricultural sector, because there is so much 'low-hanging fruit' there: irrigation, tillage and fertilizer practices being what they currently are," he said.

On the energy side, some of Calvin's suggestions included support for a carbon tax balanced by tax relief to reward those who carpool, insulate their homes and buy clean-fuel vehicles; plug-in hybrid cars; banning new coal plants; cloning nuclear and geothermal power plants; and helping developing countries with solar thermal or geothermal installations, which run steam plants, in return for binding agreements not to add fossil carbon to the air.

"Thanks to our accumulated intellectual achievements, a Third Industrial Revolution is likely coming, one that will replace fossil fuels and create nonpolluting agriculture. The problem, however, is time."

" Our present civilization is like a magnificent cathedral, back before flying buttresses were retrofitted to stabilize the walls. Civilization now needs such a retrofit and the agricultural research community has a significant role to play," he concluded.

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Centers' and Members' Day: Focused on Change in the CGIAR

Continuing reform within the CGIAR was the central focus of a presentation, followed by commentary and extensive discussion in the opening session of Centers' and Members' Day.

The presentation, entitled "The Alliance's Engagement in Revitalizing the CGIAR," was made on behalf of the Alliance of the CGIAR Centers by Emile Frison, who chairs the Alliance Executive. After briefly reviewing major challenges in agriculture, Frison stressed the need for a more flexible and effective CGIAR and for increased investment in agricultural research, following a long period of weakening donor support. He noted that important developments in the CGIAR – particularly new leadership, the Change Management Process and External Review – offer a unique opportunity for strengthening engagement between all components of the CGIAR.

In the remainder of the presentation, Frison underlined the Alliance's commitment to continued reform, with emphasis on four key aspects:

1. ***Full engagement of the Alliance in the Change Management Process*** – The Alliance needs to act with urgency and responsibility in a coordinated way.
2. ***Positive dynamics between the four pillars of the CGIAR*** – It is important to have a climate of trust, frank communication and appropriate distribution of responsibilities between the Alliance of the Centers, the Members and the CGIAR and Science Council Secretariats; various options are open for working toward these ends. The Change Management Process should be based on a shared vision, focused on a set of global development challenges that the CGIAR is well placed to address, given its research priorities.
3. ***Transparency, accountability and effectiveness in the Alliance*** – Various organizational models have been proposed that could reinforce these values in the Alliance. There is a "real appetite" among Centers for greater collaboration and connectedness.
4. ***Stronger commitment from donors and policymakers*** – The goal is a revitalized CGIAR that is truly worthy of increased investment, with innovative funding mechanisms and strong incentives for collective action. The challenge is to meet Members' requirements (e.g., for short-terms results and clear accountability), while enabling the Centers to engage in long-term research and maintain key scientific capacities.

The presentation was followed by comments from representatives of the World Bank, Global Forum on International Agricultural Research (GFAR), Forum for Agricultural Research in Africa (FARA) and US Agency for International Development (USAID).

One of the key issues they raised was the need to enhance the quality of research partnerships and focus these more sharply on problem solving. For this purpose, the CGIAR – which is, after all, a small part of the global research system – must fully exploit its comparative advantages and achieve greater synergy with other groups working toward the same goals in the broader world of development. It is also essential for the CGIAR to better integrate research on agriculture with that on natural resource management and for donors to heighten their level of commitment to agriculture, in keeping with recent shifts in the environment for overseas development aid, as reflected, for example, in the Paris

Declaration on Aid Effectiveness.

The presentation and subsequent comments stimulated a lively discussion, covering such topics as the pro-poor focus of research; participation of the rural poor and other stakeholders in shaping research agendas; broadening access to global knowledge in agriculture; balance between upstream and applied research; stronger and better engagement between the CGIAR and its research partners; the need to reduce transaction costs in partnerships; the role of new actors in agricultural development, particularly private philanthropic organizations; and the interesting coincidence that various reports of major reviews of global agricultural research and development will be released in 2008.

The rest of the day was organized so as to provide Centers and Members with ample opportunities for dialogue on matters related to the work of the Centers. Seven lunch-time sessions were programmed to share information about new initiatives, partnerships.

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Portraits of Impact of Agricultural Science

Over one hundred entries were submitted to the CGIAR Photo Competition of 2007. The competition was open to all staff employed by Centers supported by the CGIAR or by CGIAR Challenge Programs. Entries were reviewed in great detail by a panel of three judges with professional affiliations with the National Geographic Society, and the World Bank. In addition, an independent photographer specializing in portraits, joined the panel. All photos were judged on relevance to the theme, composition, and lighting.

This year, the competition allowed for two pools of nominations and were judged separately.

- Group A: non-professionals/amateurs and,
- Group B: professional photographers hired by Centers specifically to take photos.

The top ranking 24 photos were exhibited at the CGIAR's 2007 Annual General Meeting (AGM07) in Beijing and drew great interest from many AGM07 attendees.

Winners in Group A:

1st Prize
David Mowbray (CIMMYT)
Ballia, India

2nd Prize
Kurt Manrique
Huancavelica, Peru

3rd Prize
George Reyes (IRRI)
Los Banos, Laguna, Philippines

Winners in Group B:

1st Prize
Jean-Louis Gonterre(CIP)
Lima, Peru

2nd Prize
Jude Atalobhor (IITA)
Oyo State, Nigeria

3rd Prize
Ariel Javellana (IRRI)
Yen Bai, Vietnam

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