CIMMYT builds partnerships in Pakistan

By Imtiaz Muhammad

CIMMYT has a long history with Pakistan. The majority of wheat grown in the country is a result of their collaboration. Dr. Norman Borlaug’s principles of free germplasm exchange still support Pakistan’s national program.

In 1961, Manzoor A. Bajwa, a young Pakistani wheat scientist, arrived in Mexico to receive training in improved wheat production. While working alongside Borlaug and his team in Ciudad Obregón, Bajwa identified a medium-to-hard white grain line with a high-gluten content ideal for making good chapattis. The new variety also showed promising resistance to rust and powdery mildew. To mark this momentous collaboration, the line was named MexiPak—meaning line selection in Mexico by a Pakistani researcher.

In Pakistan, the name MexiPak is synonymous with the successes of the Green Revolution. In a recent meeting between CIMMYT and Sikandar Hayat Khan Bosan, the Minister for Food Security and Research, he recalled experiences in rural Punjab when he was 7 or 8 years old. One year, his father had record wheat harvests. The reason? “MexiPak,” he said.

This is just one example of CIMMYT-Pakistani collaboration. The Pak-81 line, which has been released in more countries than any other wheat variety in history, was selected by a Pakistani breeder while training at CIMMYT.

Today, Pakistan faces daunting challenges due to climate change, changing diets, increasing population, groundwater depletion and growing food security concerns. The new Prime Minister and cabinet have indicated an increased interest in developing Pakistan’s agriculture sector and the country’s agricultural research abilities. In a related development, the University of Agriculture, Faisalabad, recently became the top-ranked university for agricultural sciences in South Asia (NTU Rankings, 2013). CIMMYT and the Pakistan Agricultural Research Council (PARC) are reigniting agricultural research for development across Pakistan. Since 2010, PARC and CIMMYT have worked closely to improve agronomic practices through projects such as the Wheat Productivity Enhancement Program (W-PEP) and the new Agricultural Innovation Program for Pakistan (AIP), a $30 million program funded by the United States Agency for International Development. The PARC complex in Islamabad houses CIMMYT offices where agronomists, breeders and socio-economic experts work to improve maize and wheat yields.

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In a recent visit to Pakistan by CIMMYT Director General Thomas Lumpkin, PARC and the Pakistani government reaffirmed their commitment to establishing the Borlaug Institute for South Asia (BISA) in Pakistan. PARC donated land on its Islamabad campus to erect the BISA-CIMMYT headquarters in Pakistan, as well as land that will be converted into an experimental farm. The Pakistani government also asked BISA to build an experimental farm in every province.

BISA will provide Pakistani researchers with the opportunity to collaborate with South Asian counterparts to increase wheat yields and develop more nutritious and heat-resistant maize. BISA is following in the steps of Borlaug in starting a second productive and sustainable Green Revolution.

Scientists identify sustainable agriculture research themes in India

By M.L. Jat

Scientists need to capture and refine farmers’ conservation agriculture innovations. This recommendation came from the National Travelling Seminar on Conservation Agriculture held at the Indian Agricultural Research Institute (IARI) from 16 to 25 September. The event was jointly organized by the Natural Resource Management division of the Indian Council of Agricultural Research (ICAR), CIMMYT and the Borlaug Institute for South Asia (BISA).

The seminar evaluated existing conservation agriculture research in India to link different institutions, identify research gaps and decide on future priorities of conservation agriculture research for development. “Since the conservation agriculture principles are site-specific, this travelling seminar gave the opportunity to various scientists from multiple disciplines and institutes to come together to discuss them onsite and harmonize the results,” said M.L. Jat, CIMMYT senior cropping systems agronomist and coordinator of the seminar. An ICAR grant for conservation agriculture research supported the event.

M. Dadlani, joint director of research for IARI, talked about the crucial role IARI — India’s premier agricultural research institute — played in starting conservation agriculture practices. They began experimenting with conservation agriculture in 2005, and, in 2010, “conservation agriculture trials were started at its research farms under a challenge program involving many multidisciplinary scientists,” Dadlani said.

H.S. Gupta, director of IARI, highlighted the need for a common, neutral platform for policy makers, researchers, private sector representatives, non-governmental organizations, CGIAR institutions and farmers to assess local and regional needs, exchange information, and define priorities for the implementation of conservation agriculture, especially for resource-poor smallholder farmers. “Mining nutrients from the soil is a major concern,” he said. “At Pusa, there has been an increase in system productivity and the length of the cropping season due to conservation agriculture adoption. These factors prompt the idea of making conservation agriculture a flagship program at IARI.”
More than 25 senior researchers from 11 ICAR institutions, state agricultural universities and CIMMYT visited conservation agriculture research platforms in different cropping systems and ecologies (irrigated, mixed and rain-fed systems) at New Delhi, Karnal, Ludhiana, Jabalpur and Patna.

The scientists and farmers participated in interactive discussions. Farmers should receive a clear message from all institutions, participants said, and therefore need the convergence of investments and research. Farm innovations also need to be aligned with the latest scientific developments. “The breeders have to come out with new materials for a specific challenge,” said Alok K. Sikka, ICAR deputy director general. “Conservation agriculture goes far beyond zero-tilling and resource conservation technologies. Conservation agriculture is a package that has to be followed in a systems approach.”

Areas identified for in-depth strategic research include the study of water-nutrient and crop-livestock interactions under conservation agriculture, design and development of conservation agriculture machinery suited to different farming systems and a better understanding of weed, disease and pests in conservation agriculture conditions to hasten the development of integrated pest management strategies.

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Student reflection: My visit to CIMMYT-Hyderabad, India

By Alex Renaud

Alex Renaud is a third-year graduate student pursuing a doctorate degree in plant breeding and genetics from Purdue University in West Lafayette, Indiana, USA.

When given the opportunity to travel to India to work on heat tolerance in maize, I leaped at the prospect. I was excited by the potential for professional development and the chance to experience a different culture. My visit was part of the Heat Tolerant Maize for Asia (HTMA) collaborative project, funded by the United States Agency for International Development Feed the Future Initiative. The project supports graduate students in plant breeding to learn about and contribute to completing initiative objectives. HTMA is a public-private partnership (PPP) led by CIMMYT-Asia. Partners include Purdue University, Pioneer Hi-Bred and other seed companies and public sector maize programs in South Asia.

CIMMYT-Asia in Hyderabad, India, provides an ideal environment to evaluate or phenotype maize genotypes for heat stress tolerance. Temperatures regularly reach 40°C or higher and the relative humidity is usually below 30 percent during the reproductive development of maize planted during spring season. Additionally, the CIMMYT facilities in Hyderabad provided an excellent laboratory environment for testing hypotheses concerning the basis of heat stress tolerance in maize.

Having never been to India, I really enjoyed my stay in Hyderabad, from both research and cultural standpoints. I enjoyed getting to know the research scientists and technicians involved in the research project and had ample opportunities to learn in workshops, trainings, field visits and over dinner. My stay, which was longer than two months, provided me with the opportunity to build both personal and professional relationships.

Anyone who has visited Hyderabad in May will understand just how hot it can be. It took time for me to adapt to the heat. As I was leaving the U.S. for India, my hometown received 300 millimeters of snow in 24 hours. During my first week in Hyderabad, the temperatures exceeded 40°C. It was quite a change.

In addition to taking advantage of research opportunities, I visited several interesting cultural sites, including the Taj Mahal. My favorite memories include sampling many different types of food, from Hyderabadi biryani to India’s version of Kentucky Fried Chicken; I never tried anything I did not like!

As an aspiring plant breeder, this was a great experience, and I hope to continue my involvement with the PPP as it develops heat-stress-tolerant maize for South Asia.

I would like to sincerely thank Mitch Tuinstra, professor of plant breeding at Purdue University for providing me with this opportunity as well as P.H. Zaidi, senior maize physiologist at CIMMYT-Hyderabad and project leader of HTMA, and his wonderful team for everything that made my two-month stay professionally productive and personally memorable.
The Drought Tolerant Maize for Africa (DTMA) project and the Alliance for a Green Revolution in Africa (AGRA) Program for Africa’s Seed Systems (PASS) formed a working group this week to address challenges in commercializing improved seed to benefit smallholder farmers.

The two initiatives – funded by the Bill & Melinda Gates Foundation – will combine efforts to ensure farmers have access to improved maize seed. PASS works with seed companies while DTMA partners with research institutes and seed companies to develop and deploy drought-tolerant maize seed.

“We want to create synergies by combining efforts to reach more farmers,” said Tsedeke Abate, DTMA project leader.

Donors and research institutions invest in breeding improved seed to benefit farmers, which requires efforts by different members of the seed value chain. Research institutions, seed companies and other partners are needed to bridge the gap between researchers and farmers. This entails working with seed companies and agro-dealers to ensure they stock enough seed and have good distribution networks to reach farmers across the continent.

The working group was formed during a meeting held at AGRA’s Nairobi offices on 28 October; scientists from the Tropical Legumes II project, led by the International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT), also attended. The organizations have similarities regarding their work, programs and funding. “We want to learn more about this area and see how we can work together,” said Joseph DeVries, PASS director. “We have new varieties in our seed banks; we have to get them to farmers,” he added, explaining farmers will benefit from higher-yielding, insect- and drought-resistant varieties.

Commercialization challenges discussed included production of breeder and foundation seed, seed quality, unsold seed stocks, effective branding and packaging of seed and inadequate promotion of new varieties by seed companies through demonstrations. “Breeding a great variety is no guarantee of farmer adoption,” said Regina Richardson, a PASS associate program officer in charge of commercialization. Participants said demonstrations effectively raise farmers’ awareness of new varieties but are expensive to host.

“I’m proud to say that we have touched the lives of researchers and farmers,” Abate said. “We have released over 140 maize varieties that have a yield advantage of 20 to 30 percent over the farmers’ traditional varieties. Many of the products coming out of the DTMA breeding pipeline have been commercialized by our partners; mainly seed companies and community-based seed producers,” he added. Abate called for an inter-disciplinary and inter-institutional approach to policy.

DeVries added that in addition to seed–fertilizer and crop management play important roles in ensuring farmers benefit from improved seed. DTMA maize breeder Dan Makumbi highlighted the challenges seed companies face in seed production, such as inadequate irrigation facilities and lack of personnel to maintain the lines.

Emmanuel Monyo, ICRISAT’s Tropical Legumes project leader, said ICRISAT benefitted from the existence of about 500 small seed companies during the deployment of improved seed to farmers in India. “Partnerships that have targets and interest changed the adoption of basic seed,” Monyo said. He also highlighted the role of “women’s groups that had been empowered to produce and market legume seed,” as a strategy that contributed to the successful deployment of seed.

Partners agreed to continue sharing information by participating in each other’s meetings, sharing success stories and continuing to provide technical backstopping for seed companies and national programs.
Silo project celebrates successful first year, calls for policy reforms

By Wandera Ojanji

The wide adoption of metal silos for grain storage by smallholder farmers in eastern and southern Africa requires the identification of policy gaps, incentives and disincentives and institutional partnerships, according to CIMMYT policy economist Jones Govereh. Metal silos are effective long-term storage facilities, protecting grain from pests such as grain borers and maize weevils.

While lauding the decision of some governments to reduce the corporate tax on farming from 30 percent to 25 percent in 2010, Govereh called on them to include galvanized metal sheets imported solely for grain storage silos under the tax exemptions in place for other agricultural imports.

“Farmers are not going to realize the benefits of storage investments without proper policies in place,” Govereh said. “Governments in the region need marketing and storage policies that support a liberalized marketing environment and avoid a maize marketing monopoly, which distorts investments in storage technologies. We also need policies that facilitate better coordination of public-private operations to avoid overlaps and conflicts.”

Govereh spoke during the regional annual review and planning meeting of the Effective Grain Storage for Sustainable Livelihoods of African Farmers (EGSP) Phase-II Project held in Nairobi, Kenya, from 20-21 August. Building on the successes of the previous phase (2008-2011), EGSP-II (2012-2016) is improving food security and reducing the vulnerability of resource-poor farmers – particularly women farmers – in eastern and southern Africa through the dissemination of metal silos. The project is funded by the Swiss Agency for Development and Cooperation (SDC).

The annual review had three main objectives: to evaluate progress, achievements and challenges; to exchange ideas, information and research outputs among CIMMYT, SDC and other key partners; and to plan for the future. The meeting was attended by implementing partners in Kenya, Malawi, Zambia and Zimbabwe, CIMMYT project staff and SDC representatives.

The meeting allowed participants to share ideas and information on implementation, raise awareness on promotion and dissemination of effective grain storage technologies and consult stakeholders on effective post-harvest technologies, policy environment and market issues.

The project also held exchange visits to Kenya and Malawi for key partners. Participants shared experiences on project implementation, learned about the project’s impact on smallholder farmers’ livelihoods and discussed challenges. Tadele Tefera, CIMMYT entomologist and project coordinator, praised national teams and partners for achieving research and dissemination targets for the year.
Hugo De Groote, CIMMYT economist, said metal silos have a major impact on farmers’ livelihoods. Those who have not adopted the technology sell most of their maize at harvest (when prices are at their lowest because the supply is at its peak) while adopters sell much of their grain in the fifth month at higher prices, he said. Adopters stored their maize for two months longer than non-adopters and were food secure for one month longer.

Vongai Kandiwa, CIMMYT gender and development specialist, noted the importance of mainstreaming gender in the project to minimize the risk of creating, maintaining or exacerbating gender gaps.

Stakeholders also reported several challenges, including an inadequate number of skilled and competent artisans with entrepreneurship skills; lack of fabrication materials; expensive materials; low awareness and knowledge of the technology; and inadequate extension services. To overcome these challenges, stakeholders agreed to boost awareness through promotional events, engage in capacity building of collaborators and strengthen the artisan network.

Olaf Erenstein, director of CIMMYT’s Socioeconomics Program, thanked the implementing partners and other stakeholders for their dedication and commitment and SDC for its continued support.

New alliance to strengthen recruitment process

By Guillermo Flores Grajales

CIMMYT’s Human Resources Department is pleased to announce the launch of an alliance with International Computer Driving License (ECDL/ICDL), a global leader in certification programs for international computer skills. The alliance will help CIMMYT strengthen its recruitment and training strategies.

Guillermo Flores and members of the HR recruitment team are trained administrators and examiners and will be in charge of ICDL across the organization.

The ICDL testing platform allows the evaluation and development of computer skills. Skilled employees enable organizations to use technology more effectively, leading to increased productivity, competitiveness and efficiency in achieving operational objectives.

Initially, CIMMYT will offer ICDL tests as part of its internal recruitment process for all positions requiring this type of assessment. Testing, certification and online training will gradually be made available to staff members as part of their skill development. For more information about ECDL, visit www.ecdl.com.
Maize breeder inspired by ‘personal challenge’

BY BRENNA GOTH AND MA CONCEPCIÓN CASTRO

José Luis Torres said he is driven by a strong passion for his work. Last week marked 29 years since Torres, principal researcher for the Global Maize Program, first came to CIMMYT as a 21-year-old agronomy engineer. Since then, he has helped transform maize breeding in Mexico’s highland valleys, learned from a World Food Prize winner and earned a Ph.D. He’s not here for the salary but the dynamic work environment and a desire to “improve plants and improve people,” he said.

Torres’ interest in maize comes from its importance as a staple food for Mexicans, he said. He researched dwarf maize while studying agronomy at the Antonio Narro Agrarian Autonomous University and came to CIMMYT as a research assistant for the maize program under the late Hugo Córdova.

His passion for improving the crop comes from working in the field. Direct observation leads to solutions, Torres said. “You will learn quickly,” he said, adding that he leads his team with this attitude.

Days spent in Mexico’s highland valleys led Torres, who is originally from Coahuila, Mexico, to contribute to a maize “boom” in the area, he said. The crop was rustic and unsightly when Torres first started, but his team, which included Córdova, World Food Prize winner Surinder Vasal and Jim Lothrop, changed its architecture. The researchers implemented “family planning,” a process of eliminating maize offspring to reduce competition between plants. The changes made maize lower in stature, allowed it to mature earlier and enabled seeding two cycles per year.

Since then, Torres has used a range of improvement techniques, from traditional approaches to molecular biology and doubled haploid technology. His team has released 32 CIMMYT maize lines. This year, 12 lines will be released, including blue maize lines for the first time. Blue maize contains antioxidants and could benefit poor farmers, Torres said. His team continues to develop hybrids that can easily be harvested by mechanical means and allow more plants to grow in the same area.

Torres also focuses on the “improving people” aspect of his work philosophy. He leads a team of two engineers, five permanent employees and about 10 temporary workers. Torres, who came to CIMMYT with an undergraduate degree and has since earned a Ph.D., wants to support others in furthering their education, he said.

He also encourages young scientists to leave the computer and get out into the elements. Torres attributes his success to observation and experimentation – not “cyberbreeding,” he said. He also recognized the support of his team and the Global Maize Program. “It’s a lot of work,” Torres said of his job. “But it’s a personal challenge.”

CIMMYT maize breeder José Luis Torres said he is driven by a strong passion for his work.

Behind the Science
Recent publications by CIMMYT staff


Information submitted by the Knowledge Center.

Christmas is coming soon!

Rosalba Delgado is pleased to announce that the traditional Christmas bazaar at El Batán will take place on Friday, 29 November. The bazaar will be held in the parking area next to the fountain at the entrance of the main building. Delgado will provide more information soon but asks that if you know people interested in selling their products at the bazaar, contact her at r.d.sanchez@cgiar.org or extension 1165.

Newcomers

Sergio David Arenas García, human resources assistant, CS/Human Resources, 12 October.

Diana Lizette Estrada Lara, data entry clerk, Genetic Resources, 12 October.

Tamanna Tabassum, financial assistant, Conservation Agriculture Program/ Bangladesh, 1 October.

Enrique Garza Sánchez, agricultural data coordinator, CRP MAIZE-WHEAT, 19 October.

Anita Pratima Minz, project manager, Global Maize Program/India, 15 September.

Manoj Kanti Debnath, special project scientist, Global Maize Program/India, 10 July.

M. Patne Nagesh, special project scientist-abiotic stress breeding, Global Maize Program/India, 24 June.

Birthdays 01-15 November

Ashok Kumar 1; Abdul Mabud 1; Mohammad Enamul Haque 1; Raj Krishan Gupta 1; Cathy Farnworth 1; Fred Kanampiu 1; Ana Carolina Roa 1; Víctor López Saavedra 1; Edgar Antonio 2; Deepak Kumar Singh 2; Jorge Antonio Mendoza 3; Esperanza Villaseñor, 4; Patrick Chomba Gichobi 4; M Nagesh 4; Peter Craufurd 4; Esther Mendoza 5; Noemi Valencia 5; Anil Kumar 5; Araceli Rodríguez 6; Leonardo Juárez 6; Anil Khadka 6; Jones Govereh 6; Ernesto Morales 7; Guadalupe Aldaco 7; Dinesh Trikha 8; Maria Luisa Gómez 9; Kemal Subasi 10; Virender Kumar 10; Geneviève Renard 10; Martin Rodriguez 11; Anani Yaovi Bruce, 11; Alvaro Zermeño 12; Carmen Bretón 13; Hans-Joachim Braun 13; Roberto Cruz 14; Leopoldo Arteaga 14; Josafat Lara 14; Praveen Kumar 14; Gabriel Martínez 15; Alberto Vergara 15; Chiranjali Lal 15; Rowena Tulod 15; Phillip Alderman 15.
Great benefits from small scale mechanization

“It is not difficult to become rich though small mechanization,” said Godfrey Mwinama, mechanical engineer and service provider near Arusha, Tanzania. A maize sheller operated by a two-wheel tractor costs 3.5 million Tanzanian shilling (about 2,180 USD), but the machine can generate 100,000 Tanzanian shilling per day, for 100 days per year. The Farm Power and Conservation Agriculture for Sustainable Intensification (FACASI) project will soon release a multi-crop sheller and thresher that can be used for maize, wheat, rice, beans and pigeonpea, which will increase the profitability of small mechanization for post-harvest operations in the region. Frédéric Baudron submitted these photos.