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NEW YORK

BORLAUG GLOBAL RUST INITIATIVE
Cornell University, Ithaca, NY USA.

Message from Ronnie Coffman, Vice Chair of the Borlaug Global Rust Initiative (BRGI)

Dear friends and colleagues,

Thank you and commendations to the 250 participants from 33 different countries who attended this year's BGRI Technical Workshop in St. Paul, Minnesota, 13-16 June. We were there to network, share successes and challenges related to wheat rust, and learn from each other.

The meeting kicked off with the Field Day organized by our hosts at the USDA–ARS Cereal Disease Laboratory (CDL) and the University of Minnesota (UMN), Norman Borlaug's alma mater. The morning began with addresses from our chair, Jeanie Borlaug Laube, and the Honorable Minister of Agriculture of Bangladesh, Matia Chowdhury. Katherine Kahn, DRRW Program Officer at the Bill & Melinda Gates Foundation (BMGF), confirmed DRRW Phase II funding—$40M over five years from the BMGF and the U.K. Department for International Development (DFID). Rob Bertram, of USAID, spoke about some of the new commitments his agency is making to combat threats to the world's food supply.

Most significantly, Dr. Edward Knipling of the USDA and Rob Bertram of USAID, the lead funding agencies, led the groundbreaking ceremony for the new USDA–ARS CDL greenhouse. This investment will enable CDL researchers to expand their capacity to analyze rust samples collected at home and abroad.

Partners from the UMN and the CDL orchestrated the small grains field tour and demonstrations in the molecular diagnostic facilities on campus, as well as activities highlighting the University's rich history in rust research as E.C. Stakman's home and Borlaug's alma mater.

In the technical program that ensued at the Crowne Plaza Hotel on 14-16 June, speakers shared research findings in the areas of surveillance, molecular pathology, molecular breeding, and development and delivery of rust-resistant varieties, among other areas.

I was impressed by the 2011 Jeanie Borlaug Laube Women in Triticum Early Career and Mentor awardees who were announced during lunch on Tuesday (see related article below).

Another highlight of this year's program was the 'Competitive Graduate Student Symposium,' chaired by Bob McIntosh. Yuan Chai, Iago Lowe, and Jessica Rutkoski were selected based on the high quality abstracts they submitted for the poster session. They each gave a full talk in the plenary session, received free registration to the workshop, and a cash prize of $1,000. The session will recur each year in order to highlight the compelling research being conducted by the next generation of wheat rust workers. I know Dr. Borlaug would have been as pleased as I was to see such talent and leadership among the rising wheat and rust scientists.

Ambassador, Kenneth Quinn, from the World Food Prize Foundation, honored us by closing the meeting with a reminder of how we can all carry on Dr. Borlaug's vision of a more peaceful and food-secure world.

With the 2011 meeting behind us, I am looking forward to helping Dr. Wanquan Chen plan an equally inspired meeting in Beijing next year. Please make plans to join us the first week of September 2012 in the dynamic city of Beijing, immediately following the International Cereal Rusts and Powdery Mildew Conference.

Enjoy this quarter's newsletter. Keep up the good work!

Ronnie Coffman, Vice Chair
Borlaug Global Rust Initiative

The Jeanie Borlaug Laube Women in Triticum Awards.

The 2011 Jeanie Borlaug Laube Women in *Triticum* (or WIT) awardees were honored on 14 June, 2011 at the BGRI Technical Workshop during a special luncheon seminar in which Lucy Gilcrist gave a talk about her experiences as a woman in plant breeding research from 1960–80, and Hans Braun of CIMMYT gave his perspective on women's involvement in wheat breeding.

WIT Early Career Award. Five women scientists working in wheat, who ranged from advanced undergraduates to recent Ph.D. graduates and post-doctoral fellows, received 2011 Jeanie Borlaug Laube Women in Triticum (WIT) Early Career Awards. 'All of the WIT awardees would have made my father proud', said Jeanie Borlaug Laube, the daughter of Nobel Laureate Dr. Norman E. Borlaug and chair of the BGRI, for whom the awards are named, in announcing the awards. 'We are building a wheat-secure future with women scientists who are outstanding in wheat fields, molecular

laboratories, nurseries, or wheat-filled greenhouses.' Award winners received support to attend the annual BGRI Technical Workshop, and a training program at CIMMYT in Obregon, Mexico.

Awatif Abd El Lateef Farag Alla, from Sudan, who is conducting her Ph.D. research in plant breeding, genetics, and physiological dissection of heat and drought tolerance at ICARDA in Syria, under the guidance of Francis Ogbonnaya and Osman S. Abdalla, is working on improving wheat production in the face of global climate change.

Caixia Lan, who earned her Ph.D. in 2010 in Crop Genetics and Breeding from the Institute of Crop Science at the Chinese Academy of Agricultural Sciences, served as a lecturer in the College of Plant Science and Technology of Huazhong Agricultural University in July 2010 and worked on molecular breeding for wheat diseases resistance. Caixia continues her focus on adult-plant resistance today as a post doctoral researcher in Ravi Singh's spring bread wheat breeding program at CIMMYT in Mexico, where she works with Sybil Herrera.

Ida Paul, from South Africa (who was not able to attend the workshop), is a small grain pathologist at the Agricultural Research Council Small Grain Institute where she serves as program manager for the crop protection division. She manages 17 research projects throughout South Africa of which 13 are related to the protection of wheat against pests and diseases. Additionally, she is the main investigator in two research projects that optimizes the use of fungicides in wheat and barley. Ida received her Ph.D. in Environmental Studies from the University of Pretoria in 2006.

Silvia Barcellos Rosa, a native of Brazil who is pursuing her Ph.D. on leaf rust resistance, is supervised by Brent McCallum at Agriculture and Agrifood Canada, and Anita Brule-Babel at the University of Manitoba, Winnipeg. Silvia is particularly interested in non race-specific genes as promising sources to control leaf rust.

Stephanie Walter, from Germany, is a post-doctoral researcher in Mogens Hovmoller's group at Aarhus University in Denmark. Stephanie, whose Ph.D. was in the field of cellular and molecular biology, is working to dissect the genome of stripe rust and discover effectors that play a key role in the interaction between the wheat host and the stripe rust pathogen.

WIT Mentor Award. During the luncheon, the first WIT Mentor Award was presented to Leslie Boyd, research group leader and cereal rust pathologist at the John Innes Centre, in Norwich, UK. This award recognizes mentors of both genders who have proven to be excellent models for women working in *Triticum* and its nearest relatives. Recipients of the WIT Mentor Award receive a cash honorarium as well as the honor of organizing a session at the subsequent year's BGRI technical workshop.

Lesley was recognized for the support she gives to young female researchers in cereal sciences. As a scientist, she is passionate about her own research and instinctively supports the research and passion for science in others, female and male, young and more mature. 'Passions should be nurtured, not trampled upon,' said Boyd. Currently, Dr. Boyd is investigating the genetics and modes of action of resistance in wheat to fungal diseases that include yellow rust, stem rust, and blast of wheat. Her work covers both aspects of classical genetics of durable forms of disease resistance in wheat, as well as molecular and cellular dissection of the mechanisms behind resistance, including non-host resistance.

One of Boyd's former students, Hale Ann Tufan, from Turkey, was a 2010 recipient of the WIT Early Career Award.

For more information about the awards or to apply for the WIT Early Career Award or to or to submit a WIT Mentor Award nomination, visit http://www.bgriwit.org. The deadline for applications is 1 October, 2011.

From the BGRI blog.

Video highlights from the BGRI workshop in St Paul Minnesota are posted on the BGRI blog: Matia Chowdury, Dave Hodson, and Kenneth Quinn (http://globalrust.org).

Wheat briefs.

The Ug99 threat: disease movement and solutions. During the week of 13 June, wheat disease researchers from around the world attended the annual meeting of the Borlaug Global Rust Initiative, held in Minnesota. On Wednesday morning during a break from the proceedings, Ronnie Coffman, director of Cornell University's Durable Rust Resistance in Wheat project, spoke with Delta Farm Press about Ug99's progression, expectations for research, and the need for agricultural research funding.

Science in Africa: The Wheat Stalker. Scientists are fighting damaging wheat fungi from East Africa, but breeding new crops won't help unless farmers plant them.

Bill Gates Speaking at Chicago Council on Global Affairs. U.S. and Canadian wheat farmers lost 40 percent of their crop in the 1950s to wheat rust. Today, a form of rust called Ug99, first seen in Uganda, has spread up to the Middle East, down to South Africa, and is now threatening India. Our foundation has joined USAID, DFID, and others in funding research against this disease, but more funds are needed. It's crucial for avoiding disaster, not just from this disease, but also from the ones to come.

Improving wheat for food security. An agreement between the Ministers of Agriculture of the G20 on 23 June, 2011, in Paris underlines the importance of increasing world agricultural production, in particular that of wheat, to resolve the challenges of hunger and food price volatility. Already very active on this issue, INRA, together with other national and international research and funding organizations from about 10 countries, will launch the International Research Initiative for Wheat Improvement (IRIWI) this year.

Upcoming events and deadlines.

2nd International Plant Phenotyping Conference, 5-7 September 2011, Jülich, Germany.
https://www.congressa.de/phenosymp2011/

Women in *Triticum* Awards Deadline.
1 October, 2011 is the deadline to apply for the WIT Early Career Award or to submit a WIT Mentor award. For more information about the awards or to apply, visit http://www.bgriwit.org.

Recent publications.

Liu W, Rouse M, Friebe B, Jin Y, Gill BS, and Pumphrey MO. 2011. Discovery and molecular mapping of a new gene conferring resistance to stem rust, *Sr53*, derived from *Aegilops geniculata* and characterization of spontaneous translocation stocks with reduced alien chromatin. http://globalrust.org/traction/permalink/references1614

Rouse MN, Wanyera R, Njau P, and Jin Y. 2011. Sources of resistance to stem rust race Ug99 in spring wheat germplasm. http://globalrust.org/traction/permalink/references1613

Singh RP, Hodson DP, Huerta-Espino J, Jin Y, Bhavani S, Njau P, Herrera-Foessel S, Singh PK, Singh S, and Govindan V. 2011. The emergence of Ug99 races of the stem rust fungus is a threat to world wheat production. http://globalrust.org/traction/permalink/bgriiwc173

Strategies to reduce the emerging wheat stripe rust disease. Summary of International Wheat Stripe Rust Symposium, Aleppo, Syria, April 2011. http://icardablog.files.wordpress.com/2011/06/icarda-stripe-rust-research-to-action-report_low-res.pdf

People in the news.

Hodson on the move. David Hodson, currently employed by the FAO in Rome, will relocate in August to CIMMYT and be based in Addis Ababa, Ethiopia. Hodson is the international focal point for stem rust surveillance and will carry this role with him in his new location.

Dubcovsky wins fellowship to help feed the world. Wheat geneticist Jorge Dubcovsky is one of two plant biologists at UC Davis to be among the first-ever class of HHMI–GBMF Investigators, funded jointly by the Howard Hughes Medical Institute and the Gordon and Betty Moore Foundation. Professor Dubcovsky and Simon Chan, assistant professor in the

Department of Plant Biology, are among 15 recipients nationwide of the new awards program, to be supported with $75 million from the two organizations over the next five years. From Plant Sciences Weekly Newsletter, 17 June, 2011.

Felister Mbute Nzuve receives African Women in Agricultural Research and Development fellowship. Felister Mbute Nzuve received an African Women in Agricultural Research and Development (AWARD) grant to support her PhD research on stem rust. Nzuve's work focuses on characterizing new genes (seedling and APR) against Ug99 and breeding for rust resistance. She is conducting her research at the Kenya Agricultural Research Institute in Njoro with CIMMYT wheat breeder Sridhar Bhavani.

AWARD is a professional development program that strengthens the research and leadership skills of African women in agricultural science, empowering them to contribute more effectively to poverty alleviation and food security in sub-Saharan Africa. In selecting Nzuve, the organizers recognize her important research, leadership potential, and ambition to bring measurable change for the poor in rural communities. Nzuve also was offered a travel fellowship from BGRI. AWARD is a project of the CGIAR gender and diversity program and is funded by the Bill & Melinda Gates Foundation and the U.S. Agency for International Development. For more information on AWARD visit http://www.awardfellowships.org/.

Online resources.

Identification and management of stem rust on wheat and barley. This extension publication addressing the identification and management of stem rust was published in March 2011. While focused on the U.S. and Canada, it provides an illustrated overview of stem rust and it's affect on wheat and barley. A pdf version of the flyer is posted on the USDA website (http://www.ars.usda.gov/SP2UserFiles/Place/36400500/Stem_Rust_Man_National.pdf).

A companion brochure, Identifying rust diseases of wheat and barley, is available on the BGRI website (http://www.globalrust.org/traction/permalink/Pathogen210).

Slide presentations from the BGRI Technical Workshop. Many of the slide files from the workshop presentations are posted online at the BGRI website (http://globalrust.org/traction/permalink/about206).

From the field.

The International Winter Wheat Improvement Program (IWWIP) traverses eastern Europe. Every two years, the IWWIP conducts a traveling seminar to evaluate germ plasm, assess current practices and relations, and develop an improved game plan for the future. This spring the IWWIP Traveling Seminar, co-sponsored by the subregional office of the United Nations Food and Agriculture Organization for Central Asia, attracted 46 researchers from 17 countries and traveled through Turkey, Bulgaria, and Romania – covering a total of more than 2,000 km.

New cultivars and mindset in Nepal. On 16 May, 2011, a workshop in Kathmandu attracted 80 farmers interested in wheat cultivars, quality seed production, and raising wheat production and profitability. The event, titled 'Wheat Seed Production and Rusts Disease Management Day', was organized by the Nepal Agriculture Research Council, the National Agricultural Research and Development Fund, Nepal's Ministry of Agriculture and Cooperation, and CIMMYT.

The objectives of the day were to: 1) generate awareness of new agronomically superior Ug99-resistant cultivars among farmers; 2) involve farmers in quality seed production and dissemination for the next crop cycle; and 3) disseminate information about wheat production technology available to small scale farmers.

Tackling complexity in winter wheat. Winter wheat constitutes a staple food in the Central and West Asia and North Africa (CWANA) region, where it is grown on around 18 x 10^6 ha in wide-ranging cropping systems.Wheat can be found in climates that span cold, dry environments; temperate areas with heavy rainfall; and irrigated, high-yielding lands constrained by different biotic and abiotic stresses. These varied landscapes contribute significantly to the grain's diversity and complexity. To address the constraints upon and future outlook of this multifaceted crop, wheat researchers convened at the 1st Regional Winter Wheat Symposium on 25-27 July, 2011, in Tabriz, Iran. The event drew more than 100 participants from 12 countries in the CWANA region.

Mobile seed marketing in Africa. On 1 May, 2011, the busy streets of Morogoro, Tanzania, were treated to a surprising sight, owing to the unconventional promotional efforts of Tanseed International Ltd. Staff of this Tanzanian seed company drove a vehicle topped with Tanseed drought-tolerant cultivars through the city's crowded streets during the nation's Worker's Day Celebration.

Iran and CIMMYT partnership strengthened. CIMMYT and Iran have revitalized their long-standing and prosperous relationship. During a recent visit there, CIMMYT Director General Thomas Lumpkin and Global Wheat Program Director Hans-Joachim Braun signed the coöperative annual work plan. The memorandum, signed on Iran's behalf by Dr. Jahangir Pour-Hemmat, Deputy Minister of Jihad-e-Agricultural and Head of the Agricultural Research Education & Extension Organization, commits both parties to joint work on high-yielding, stress-tolerant and disease resistant wheat and triticale cultivars.

Linking research to development. Collaborative research in Egypt is providing a model for other countries with similar challenges. The Food Security Project is helping to increase wheat yields in irrigated systems. The Egypt–ICARDA wheat improvement project is developing improved varieties that combine high yield, disease resistance and good grain quality. Farmers involved in the two projects have reported excellent results from the 2010–11 season, wheat yields increased by 25% in El Sharkia Governorate and 17% in Assiut Governorate. Using improved technologies, farmers in El Sharkia achieved a 20% saving in irrigation water. The Water Benchmark Project is testing further improvements in the raised-bed planting technique and other measures to increase water productivity. Field trials of new wheat and legume cultivars have also been encouraging, with high yields and high levels of disease resistance.

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Editor's notes.

The Borlaug Global Rust Initiative facilitates the evolution of a sustainable international system to contain the threat of wheat rusts and enhance wheat productivity to withstand future global threats to wheat. Any person or institution with an interest or stake in wheat rust research and development is welcome to be a member of the BGRI, just send a message to BGRI@cornell.edu indicating your interest, and you will be added to our email distribution list. For more information about the BGRI, wheat rust projects, and who's who in the wheat rust world, visit the BGRI websitehttp (http://global-rust.org).

This quarterly newsletter is edited by Cally Arthur and sent to members of the BGRI. Suggestions on format and content are always welcome by the editor, at BGRI@cornell.edu or callyarthur@cornell.edu.

BGRI members are encouraged to contribute to the newsletter. Submissions may be technical communications on wheat breeding and rust pathology issues; announcements of meetings, courses and electronic conferences; book announcements and reviews; websites of special relevance to wheat and the rusts; announcements of funding opportunities; requests to other readers for information and collaboration; and feature articles or discussion issues brought by subscribers.