



BGRI Borlaug Global Rust Initiative

January 2017

## UK aid supports scientists fighting threats to global wheat supply



**Clockwise from R:** Maricelis Acevedo, Cornell plant pathologist and associate director for science for the Delivering Genetic Gain in Wheat (DGGW) project and Sawson Tawkaz, of ICARDA; Ronnie Coffman (r), Cornell plant breeder and director of the DGGW with Bedada Girma (l), wheat breeder and Ethiopian coordinator for DGGW; Dave Hodson, senior scientist with CIMMYT and director of the rusttracker.org global wheat rust monitoring system.

With the new year comes new opportunities and developments for the BGRI.

We are pleased to announce that the four-year [Delivering Genetic Gain in Wheat \(DGGW\)](#) project will receive \$10.5M in UK aid investment. This funding, in addition to the \$24M grant pledged by Bill & Melinda Gates Foundation that we announced in March 2016, will go towards wheat research and build on the previous efforts of the [Durable Rust Resistance in Wheat \(DRRW\)](#) and Borlaug Global Rust Initiative projects.

"Over the last nine years, we have built a global community of wheat scientists whose efforts have so far prevented the global epidemics of Ug99 stem rust anticipated by Dr. Norman Borlaug back in 2005," said Ronnie Coffman, international plant breeder and director of International Programs at Cornell University. "Working with national and international partners, we have delivered more than 65 varieties of wheat with improved resistance to rust and increased wheat yields globally."

[Learn more about the future of DGGW and its collaborators on the BGRI website.](#)

**Open access Rust Pathology and Applied Plant Breeding course**

## now online

The BGRI and its partners have launched a comprehensive online course titled [The Art and Science of Rust Pathology and Applied Plant Breeding](#), based on the SAARC (South Asian Association for Regional Cooperation) course held in Kathmandu, Nepal, in 2015.



This self-directed course is available through the Canvas learning platform and focuses on topics related to identifying and managing plant diseases, particularly of wheat. Students will be able to watch video lectures from world-renowned wheat pathologists and breeders and test their comprehension of the material by taking short interactive quizzes.

The course includes lectures from:

- Professor Robert Park, a leading rust pathologist, directs the Australian Cereal Rust Control Program, and is an expert on how fungal rust pathogens evolve and acquire virulence for resistance genes in their hosts.
- Professor Zak Pretorius, respected pathologist with the University of the Free State in South Africa, was one of the first to characterize Ug99, working with William Wagoire in Uganda.
- Dr. David Hodson, CIMMYT senior scientist, leads global surveillance and prediction-modeling efforts to monitor fungal rusts with the goal curtailing their spread.
- Dr. Gordon Cisar, senior project manager for the DRRW project, is a former hybrid wheat breeder with years of experience developing winter wheat varieties for the U.S., and triticale cultivars for the Central Plains of the U.S.



L to R: Prof. Robert Park, Prof. Zak Pretorius, Dr. David Hodson, Dr. Gordon Cisar

Other faculty who have delivered guest lectures and helped with the SAARC course practicums in the past include Sarala Sharma, Arun Joshi, S.C. Bhardwaj, Mohinder Prashar, Dhruva Thapa, Indu Sharma, and others.

[Read more about the online course at the BGRI blog.](#)

[Enroll in the online course through the Canvas website.](#)

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## Spotlight on wheat research at PAG XXV

The 25th annual Plant & Animal Genome Conference, held 14-18 January 2017, featured a workshop on methods of developing disease resistance in cereals, particularly in wheat.

Maricelis Acevedo, DGGW associate director for science, and Jesse Poland, DGGW genomic selection and high throughput phenotyping objective leader, participated in the workshop as facilitators.

Workshop: [New Approaches for Developing Disease Resistance in Cereals](#)

A paper by Naeela Qureshi, a 2014 [Women in Triticum](#) award winner, was also presented at the conference. She is currently a final year PhD student at the Plant Breeding Institute, University of Sydney, Australia. Her research focuses on genetic characterization and molecular mapping of stripe rust and leaf rust resistance genes in wheat.



Naeela Qureshi, 2014 WIT award winner and PhD student.

"The work presented at PAG was about fine mapping of two widely effective linked stripe rust and leaf rust genes *Yr47* and *Lr52*," Qureshi explained. "By using different genomic resources like IWGSC and 90K SNP genotyping we were able to develop closely linked robust markers to both genes which will facilitate pyramiding of these genes along with other rust resistance genes for achieving durable resistance."

Paper: [Fine mapping of the chromosome 5B region carrying closely linked rust resistance genes \*Yr47\* and \*Lr52\* in wheat](#)

## Career and Educational Opportunities

### **FAO-Hungarian Government Scholarship 2017-2018** *Deadline 28 Feb 2017*

Fully funded by the Hungarian government. Open to nationals of several African and Asian countries. Master of Science courses for 1) Rural development and agribusiness, 2) Horticulture, 3) Agricultural water management.

<http://www.fao.org/europe/news/detail-news/en/c/462407/>

### **Research Plant Pathologist (USDA-ARS) Corvallis, OR**

Full-time plant pathologist to conduct research on the biology, epidemiology, and impact of pathogens on crop and seed health within grass seed production systems.

<https://www.usajobs.gov/GetJob/ViewDetails/461740100/>

### **Research Molecular Biologist/Microbiologist/Plant Pathologist (USDA-ARS) Peoria County, IL**

Research Associate position to conduct plant, microbial and molecular level studies of endophytes being evaluated to improve the agronomic traits of wheat.

<https://www.usajobs.gov/GetJob/ViewDetails/436469800/>

## Upcoming Events

### **DGGW Wheat Blast Training Workshop, hosted by CIMMYT**

5-17 February 2017

*Dhaka, Bangladesh*

The outcomes of this upcoming workshop will be featured in February's BGRI newsletter.

## Rust Workshop held in conjunction with the 29th Fungal Genetics Conference

14 March 2017

Asilomar, CA, USA

For more information, contact [Sebestien Duplessis](#).

## Soft Skills at the Punjab Agricultural University in India

21-24 March 2017

Punjab Agricultural University, Ludhiana, India

<https://www.jic.ac.uk/international-partnerships/soft-skills-workshop/>

A soft skills workshop in scientific communication; from publishing to choosing a career path.

## 13th International Wheat Genetics Symposium

23-28 April 2017

Tulln, Austria

<http://iwgs2017.boku.ac.at/>

## Research Updates

### Wheat blast disease - An overview

Journal of Wheat Research

[Link](#)

### Optimizing Training Population Size and Genotyping Strategy for Genomic Prediction Using Association Study Results and Pedigree Information. A Case of Study in Advanced Wheat Breeding Lines

PLOS One

[Link](#)

### Rapid Identification of Resistance Loci Effective Against *Puccinia graminis* f. sp. *tritici* Race TTKSK in 33 Spring Wheat Landraces

Plant Disease

[Link](#)

### Genetic mapping of resistance to the Ug99 race group of *Puccinia graminis* f. sp. *tritici* in a spring wheat landrace Cltr 4311

Theoretical and Applied Genetics

[Link](#)

### Molecular Mapping of Stem Rust Resistance Loci Effective Against the Ug99 Race Group of the Stem Rust Pathogen and Validation of a Single Nucleotide Polymorphism Marker Linked to Stem Rust Resistance Gene *Sr28*

Phytopathology

[Link](#)

### Genetic Loci Conditioning Adult Plant Resistance to the Ug99 Race Group and Seedling Resistance to Races TRTTF and TTTTF of the Stem Rust Pathogen in Wheat Landrace Cltr 15026

Plant disease

[Link](#)

Genetic diversity of spring wheat from Kazakhstan and Russia for resistance to stem rust Ug99

Euphytica

[Link](#)

## Contribute to the BGRI Newsletter

If you have any news of interest to the BGRI community, please contact us and we will try to include it in subsequent BGRI newsletters. Events, opportunities, photos, and new publications are especially welcome.

[Click Here to Contact the BGRI](#)

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