

## AIP-CIMMYT Conducts the Largest Evaluation of Maize Germplasm in Pakistan's History

■ **ABDU RAHMAN BESHIR**

Pakistan's Agricultural Innovation Program (AIP) tested more than 700 diverse maize lines this past year, as part of its efforts to develop more affordable, well-adapted maize varieties. During two cropping seasons, 15 trials consisting of 680 diverse maize lines were conducted across Pakistan. AIP's maize variety evaluation is the largest in the history of Pakistan, both in the number of varieties and of testing sites.

Compared to wheat, which has had a stronghold in Pakistan since the Green Revolution of the 1970s, maize development and deployment activities are rather recent. Production of maize, Pakistan's third most important cereal crop, is projected to keep on increasing



▲ While visiting AIP maize trials, Dr. Muhammad Azeem Khan, NARC Director General, discusses NARC's seed road map. Photo: Salman Saleem/CIMMYT.

over the next several years. Despite growth, 85-90 percent of maize seed is imported hybrid seed, which means the seed price in Pakistan is very high compared to seed prices in other South Asian countries.

"The current seed price of US \$6-8/kilogram is too expensive for resource-poor farmers to adopt improved varieties. That is why CIMMYT aggressively embarked on testing such a huge quantity of maize varieties. Pakistan is the new frontier for CIMMYT, and development interventions can have a quick impact," said AbduRahman Beshir, CIMMYT's Maize Improvement and Seed Systems Specialist.

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At its recently held annual meeting (8-9 April 2015), the AIP-Maize Working Group invited public and private partners to share the field performance results of CIMMYT maize varieties introduced from Colombia, Mexico and Zimbabwe. Some of the entries evaluated during the 2014 spring and summer season outyielded the commercial check by more than 50 percent. Sikandar Hayat Khan Bosan, Federal Minister of Food Security and Research, applauded AIP-Maize's efforts after visiting the maize stall where AIP-Maize displayed a diversity of maize ears at a recent agricultural expo.

"Pakistan's maize sector is being activated by AIP-Maize. Location testing followed by provision of parental lines for local seed production is the kind of support we need to have sustainable interventions," said Shahid Masood, member (Plant Sciences) of the Pakistan Agricultural Research

**"Pakistan's maize sector is being activated by AIP-Maize. Location testing followed by provision of parental lines for local seed production is the kind of support we need to have sustainable interventions,"**

Shahid Masood  
Pakistan Agricultural Research Council

Council (PARC) who presided over a maize working group with more than 45 participants.

Based on a seed delivery road map, CIMMYT has started allocating the best performing varieties to partners, with three varieties already included in Pakistan's maize register. Imtiaz Muhammad, CIMMYT's country representative in Pakistan and AIP project leader, urged participants in the maize working group meeting to fast-track the deployment of CIMMYT varieties and distribute seed to resource-poor farmers.

According to Beshir, Pakistan's yearly bill for imported hybrid maize seed reached US \$56 million during 2013/14, which makes maize the highest priced imported seed among all the cereals. "The foundation is now being laid to make Pakistan self-sufficient in maize seed," he said.

AIP-Maize is currently working with nine public and nine private companies representing the diverse ecologies of Pakistan. The AIP-Maize network is a platform for data and knowledge sharing, which helps to create synergies among stakeholders. ¶¶



▲ Participants in the annual AIP-Maize Working Group meeting. Photo: Amina Nasim Khan/CIMMYT.

# HTMA Maize Hybrids in Nepal Offer Cheaper High-Quality Seed Alternative to Indian Imports

■ TIRTHA R. RIJAL, K.C. GOVIND AND P.H. ZAIDI



▲ Farmers, seed company representatives, agro-input dealers and national maize program participants along with CIMMYT and USAID representatives at HTMA demo. Photo: NMRP.

In Nepal, CIMMYT's Heat Stress Tolerant Maize for Asia (HTMA) project held a hybrid maize field day on 16 April 2015 in Dumarvana and Nijgadh villages, Bara district, and on 17 April at the National Maize Research Program (NMRP), Rampur, Chitwan. The event was attended by over 70 participants who scored hybrids by preference and criteria. They rated as the top hybrids, six HTMA varieties with scores higher than the best commercial hybrids.

To accelerate hybrid maize production and create climate-change resilient crops, NMRP joined the HTMA project funded by the United States Agency for International Development (USAID). Launched in 2013, the project focuses on developing and deploying high-yielding, climate-resilient hybrids for stress-prone ecologies in several South Asian countries, including Nepal. Every other year, new varieties and products are ready for on-farm testing and deployment. The first 24 high-performing hybrids were recently planted at four locations in Nepal, including three demonstration plots in farmers' fields and one at the NMRP research station in Rampur.

Maize is the second most important food crop in Nepal, after rice. It contributes approximately 25.7 percent of Nepal's food basket and occupies around 26.0 percent of the total cropped area. About 55 percent of all maize in Nepal is consumed as food, 20 percent as poultry feed, 15 percent as animal feed; the rest is destined for various industrial, seed and miscellaneous uses. Nepal imports most (about 65 percent) of its domestic maize requirements, mainly from India. Most of the maize grown in Nepal is open-pollinated varieties (OPVs); however, new hybrid seeds introduced from India are greatly preferred by Nepali farmers. In view of recent trends, NMRP has focused on hybrid maize and has already released two maize hybrids: Gaurav and Rampur Hybrid-2.

Hom Nath Poudel, a maize farmer from Dumarvana village who hosted the demonstration at his farm, stated, "I am very impressed with performance of the new hybrids, because they are high-yielding and their ears are ready for harvest. We can use almost all the plant biomass as green fodder for our cattle." Voicing concern about HTMA seed availability, Poudel said that next year, HTMA hybrid seed must be made available by seed companies or NMRP. If not, farmers will produce the seed themselves. ▶



▲ P.H. Zaidi discussing HTMA hybrids with Belay Mengistu, Agriculture Officer at USAID-Nepal mission. Photo: NMRP.

Nepal currently depends on hybrid maize seed imported from India. However, delivery is sometimes delayed, and the seed is not always high quality. Having a domestic source of maize hybrid seed would provide a good solution to these problems. Echoing the opinion of many field day participants, Hari Raj Bhattarai of SEAN Seeds, a Nepali seed company, said, “I am glad to see very promising HTMA hybrids, which we would like to adopt, produce, and supply to Nepali farmers.”

Belay Mengistu, Agricultural Development Officer, USAID, also expressed his pleasure at seeing “... promising HTMA hybrids in farmers’ fields just three years after the project launch. This is truly the way forward, with all stakeholders having a voice in the final product, especially farmers and even more so female farmers, who do most of the farming in Nepal.”

K.C. Govind, newly appointed NMRP coordinator, noted the interest shown by all stakeholders and said that NMRP will officially register the best HTMA hybrids so that they can be fast-tracked and brought into large-scale seed production by local seed partners, and made available to farmers.

Field day participants included local maize farmers, Nepali seed companies, agricultural input dealers, government seed system officers, maize researchers from NMRP and other maize research stations, the National Agricultural Research Council, and Belay Mengistu, Agricultural Development Officer from USAID. CIMMYT participants included P.H. Zaidi, senior maize physiologist and HTMA project leader, and A.R. Sadananda, seed system specialist. ¶¶

## BISA and Other Innovators Herald Bright Future for Agriculture in India

The Borlaug Institute for South Asia (BISA) was recently mentioned in an [article](#) highlighting the agricultural innovations and opportunities that are arising for smallholder farmers across India. BISA’s system approach to farming, which combines productivity with sustainability, was praised as a radical departure from conventional agriculture, which requires massive soil movement and churning before every sowing. Other BISA initiatives such as smallholder mechanization, zero-till farming and intercropping were also credited for empowering smallholders across project sites. The article concludes that these innovations and the entrepreneurship of smallholder farmers will lead to the future success of India’s agriculture.

To read more about BISA’s efforts and the positive agricultural innovations occurring throughout India, click [here](#). ¶¶



Photo: Michelle DeFreese/CIMMYT

# Happy Seeder Technology Spurs Conservation Agriculture in China

■ ALLEN JACK McHUGH

The CIMMYT-China Global Conservation Agriculture Program (GCAP) has delivered to key collaborators, locally designed planters that are being implemented through a broad Conservation Agriculture (CA) research network headed by Allen Jack McHugh, GCAP-China's cropping system agronomist. National researchers are introducing CA into their programs and CA demonstration sites across the country are being readied for planting.

GCAP-China has been working closely with the Wangnongda Peanut Machinery Manufacturing Company (WPMMC) based in Qingdao, to develop a range of planters based on happy seeder technology, which is utilized extensively in India. A constraint to adoption of zero tillage across China has been the lack of a suitable planter that can cope with high residue loads on small farms under irrigation and on rainfed farms in the higher rainfall areas further south. WPMMC has worked with Qingdao Agricultural University and Ningxia Academy of Agricultural and Forestry Science (NAAFS) on various planting and harvesting equipment for years. NAAFS imported a large happy seeder from India in 2009, and then developed a range of low-cost, light-weight happy seeders for use with 25 horsepower (hp) to 75 hp tractors and, most recently, a two-wheeled tractor.

In March 2015, three hand-built customized planters were delivered to three of CIMMYT's collaborators in western China. A long-time proponent of CA in Sichuan Province, Tang Yonglu, Head of the Crop Research Institute of Sichuan Academy of Agricultural Sciences, used the mini happy seeder to establish the first rainfed CA demonstration field in Santai County. The joint project between a local farmer, the County Agricultural Mechanization Bureau, the Sichuan Academy of Agricultural Science and GCAP-China will be planting maize into standing wheat stubble in a freshly harvested field around May 20.

South of Yinchuan in Ningxia Province is the city of Zhongwei, which is flanked by the Yellow River and the Tengger Desert on two sides. Despite these very harsh conditions, the Provincial Agricultural Mechanization Bureau and a local farmer association plan to establish a CA demonstration site to conduct a replicated comparison of farmers' practices and CA. The newly acquired happy seeder will allow farmers to plant maize into last year's stubble.

In Gansu Province, Professor Li Lingling of Gansu Agricultural University oversees a long-term CA research site established in 2002. Located in a harsh, arid region, it is one of the longest-running rainfed CA ▶



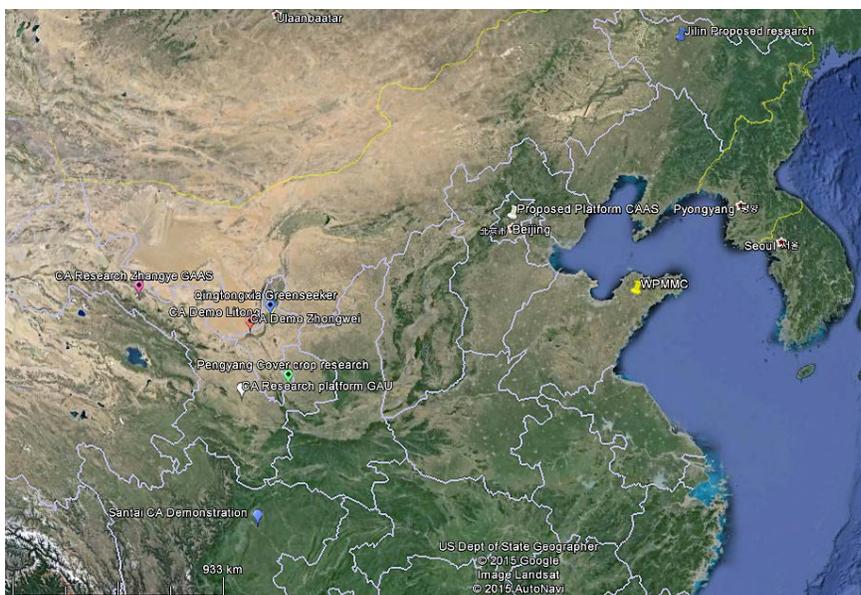
▲ Professor Li Lingling of Gansu Agricultural University discusses the operation of the happy seeder with Danny Decombel, agronomy consultant, and the Director Che Zongxian of the Fertilizer Institute of the Gansu Academy of Agricultural Sciences. Photo: Allen Jack McHugh/CIMMYT.



▲ At the Sichuan Academy of Agricultural Science Research Station in Chengdu, Tang Yonglu and his CA research team welcome the mini happy seeder they received through GCAP-China agronomist, Allen Jack McHugh. Photo: Allen Jack McHugh/CIMMYT.

► research sites in China. Thanks to its collaboration with Gansu Agricultural University, CIMMYT will have access to research that demonstrates the advantages of CA without waiting for CA's benefits to slowly become evident under low input conditions. Thanks to financial and technical support from CIMMYT, Lingling and her research team at Dingxi received a two-wheeled happy seeder from Qingdao. They have already sown spring wheat with the seeder and are currently planting field pea in the research plots. "The machine is lightweight, maneuverable, and highly suited to research plot activities," said Lingling.

GCAP-China, in collaboration with a growing research network, will continue to develop CA mechanization techniques while conducting field tests to evaluate the current suite of happy seeders and improve and adapt them to China's diverse terrain. 📍



▲ GCAP sites in China. The map also indicates collaborators in Jilin (NE), Zhangye (NW), Beijing, and our activities in Ningxia.

## CIMMYT-CCAFS Initiative Seeks to Achieve Food and Nutrition Security in East Africa by 2025

■ FITE GETANEH AND KINDIE TESFAYE

The CIMMYT-led Integrated Agricultural Production and Food Security Forecasting System for East Africa (INAPFS) project was launched at an inception workshop held on 15-16 April 2015 in Nairobi, Kenya, that brought

together participants from national weather services and disaster risk management offices in Ethiopia, Kenya, Tanzania, Uganda and Burundi, as well as from NGOs and research institutions operating in the region.

Funded by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) under its Flagship 2 initiative, the project aims to develop a robust, scientifically sound and user-friendly forecasting system that integrates improved seasonal climate, production and food security forecasts for east Africa. It will also provide accurate and spatially disaggregated early warnings to local and national governments and relief agencies, enabling them to respond to climate crises in a timely and efficient manner. ►



▲ Workshop participants attending an online presentation. Photo: Kindie Tesfaye/CIMMYT.

The inception workshop was launched by Guleid Artan, Director of the Climate Prediction and Applications Centre (ICPAC) of the Intergovernmental Authority on Development (IGAD), and Bwango Apuuli, IGAD consultant. According to Kindie Tesfaye, CIMMYT crop modeler, the workshop had three main objectives: to build awareness about the project and its role in early warning systems in eastern Africa, to achieve a shared understanding of INAPFS objectives and approaches, and to refine the proposed work plan.

“Climate related disasters such as droughts are among the reasons behind the ever increasing food insecurity that has persisted for ages in the Greater Horn of Africa region,” said Artan. Early warning information is now critical for decision makers to take timely action and save lives, property and the environment. “When policy makers have the right information, they make the right decisions and take the right actions,” Artan added.

**“Climate related disasters such as droughts are among the reasons behind the ever increasing food insecurity that has persisted for ages in the Greater Horn of Africa region,”**

Guleid Artan  
Director of the Climate Prediction and Applications Centre



▲ INAPFS Inception Workshop participants at ICRAF campus, Nairobi. Photo: Brenda Wawa/CIMMYT.

Clare Stirling, senior scientist with CIMMYT’s Global Conservation Agriculture Program, emphasized that CIMMYT is involved in climate change research globally to help vulnerable communities in maize- and wheat-based farming systems adapt to changing environments. Stirling added that the INAPFS project is one of two projects in the CCAFS Flagship 2 initiative that CIMMYT is leading in the east African region.

James Kinyangi, CCAFS east Africa regional program leader, stated that the regional CCAFS program is working with the private sector, governments, agro-advisory service providers, NGOs, national agricultural research systems and international research institutions to build a food and nutrition secure east Africa by 2025.

During the workshop, participants learned about the INAPFS project and analyzed the strengths and weaknesses of early warning systems to determine project needs. Group

discussions highlighted that current systems have been quite useful but mainly for humanitarian purposes, and that the INAPFS project would enhance forecasting skills by adding accuracy (spatial and temporal resolution) and incorporating additional crop production and food security components. Workshop participants also reached a common understanding on the different component activities and how those activities would finally integrate to help achieve project goals.

The INAPFS project is a multi-partner initiative involving institutions such as the ICPAC, the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), the International Center for Tropical Agriculture (CIAT), the Famine Early Warning Systems Network (FEWS NET), the UN World Food Program (WFP), and the Partnership for Economic Policy (PEP), as well as national weather services, and disaster risk management and food security offices in project countries. ¶¶



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# 10 Influential African Women Are Shaping the Future of Agriculture

■ KATELYN ROETT

The Journal of Gender, Agriculture and Food Security recently featured ten influential African women on their online [blog](#). Despite the low percentage of women in agricultural research – only one out of four researchers and one out of seven research leaders are female – there are powerful women actively championing the cause of gender equality in agriculture and shaping the future of agricultural growth in Africa.

Among these groundbreaking researchers, scientists and policymakers is Lindiwe Majele Sibanda, who served on CIMMYT’s Board of Trustees since 2009 and finished her appointment this past April. Currently CEO and head-of-mission at the Africa-wide Food, Agriculture and Natural Resources Policy Analysis Network ([FANRPAN](#)), Sibanda has over 20 years of experience in rural development, research and partnerships.

Other current and former CGIAR employees included among the ten women are Agnes M. Kalibata, former scientist with the International Institute of Tropical Agriculture ([IITA](#)); Segenet Kelemu, former Director of the Biosciences eastern and central Africa Hub at the International Livestock Research Institute ([BeCA-ILRI](#)) and senior scientist and leader of Crop and Agroecosystem Health Management at the International Center for Tropical Agriculture ([CIAT](#)); Ruth Oniang’o, former International Rice Research Institute ([IRRI](#)) board member; and Susan Kawira Kaaria, former senior scientist at the International Center for Tropical Agriculture ([CIAT](#)).

Read the original story by Jemimah Njuki, editor-in-chief, Journal of Gender, Agriculture and Food Security, at the Journal’s [blog here](#). ¶¶

## CIMMYT-SARO Mourns a Dedicated Colleague

■ JOHNSON SIAMACHIRA

On Sunday 12 April 2015, CIMMYT’s Southern Africa Regional Office (SARO) awoke to the sad news of the passing of Mazowe Juwao, a general worker who served the organization for 25 years.

During more than two decades working with CIMMYT-SARO, Juwao made significant contributions towards maintaining the station’s office facilities and grounds, as well as its vehicles.

Born 58 years ago in Zimbabwe’s Midlands town of Kwekwe, Juwao worked for the University of Zimbabwe Farm, where CIMMYT operates, before being hired by CIMMYT in 1990 to assist field irrigation crews. CIMMYT-SARO has been working in southern Africa for 30 years.

Takemore Wadi, CIMMYT-SARO caretaker who worked closely with Juwao, said he was hard working and made sure that the facilities at the office were clean and operational at all times.

“No position is too big or too small for us, and we hold every worker in high esteem,” said Cosmos Magorokosho, Acting CIMMYT-SARO Representative. “We are poorer without Juwao.”

Juwao was buried in Goromonzi District, in Mashonaland East Province, his rural home.

The CIMMYT-SARO community sends its heartfelt sympathy and prayers to Juwao’s spouse, Tangisai, and their children. ¶¶



▲ The late Mazowe Juwao was a dedicated CIMMYT-SARO worker for 25 years.

## Why We Need Genebanks: The World's International Genebank Managers Tell Us

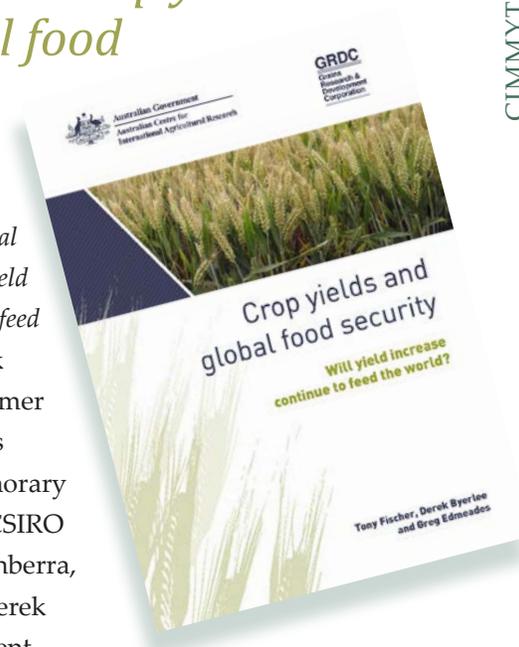


A new video released by Crop Trust featuring Dr. Thomas Payne, Head of CIMMYT's Wheat Germplasm Bank, among other international genebank managers, highlights the importance of genebanks in safeguarding biodiversity and ensuring future food security across the globe. According to Payne, "genebanks are an insurance policy for agricultural development today and for the future... genetic diversity enables crops and farmers to be prepared for uncertain events." The role of genebanks in preserving and distributing crop diversity worldwide is crucial to securing our food, forever. 📺

## Get the book *Crop yields and global food security* for free

*Crop yields and global food security: will yield increase continue to feed the world?* is a book co-authored by former CIMMYT scientists

**Tony Fischer** (Honorary Research Fellow, CSIRO Plant Industry, Canberra, ACT, Australia), **Derek Byerlee** (Independent Researcher, Washington, DC, USA), **Greg Edmeades** (Independent Consultant, Cambridge, New Zealand) Monograph No. 158 (2014) of the Australian Centre for International Agricultural Research (ACIAR). The book was officially released during the Borlaug Summit on Wheat for Food Security held in March 2014 in Ciudad Obregón, Sonora, México. The book can now be downloaded in PDF for free at [www.aciar.gov.au/publication/mn158](http://www.aciar.gov.au/publication/mn158). 📖



### Recent Publications by CIMMYT Staff

#### ■ KNOWLEDGE CENTER

[Economic trade-offs of biomass use in crop-livestock systems : exploring more sustainable options in semi-arid Zimbabwe.](#) 2015. Homann-Kee Tui, S.; Valbuena, D.; Masikati, P.; Descheemaeker, K.; Nyamangara, J.; Claessens, L.; Erenstein, O.; Rooyen, A.; Nkomboni, D. *Agricultural Systems* 134 : 48-60.

[Fructan and hormone connections.](#) 2015. Valluru, R. *Frontiers in Plant Science* 6 : 180.

[On-farm experimentation on Conservation Agriculture in maize-legume based cropping systems in Kenya : water use efficiency and economic impacts.](#) 2015. Micheni, A.N.; Kanampiu, F.; Kitonyo, O.; Mburu, D.M.; Mugai, E.N.; Makumbi, D.; Kassie, M. *Experimental Agriculture*. Online First.

[Social and income trade-offs of conservation agriculture practices on crop residue use in Mexico's central highlands.](#) 2015. Beuchelt, T.D.; Camacho Villa, C.T.; Göhring, L.; Hernández Rodríguez, V.M.; Hellin, J.; Sonder, K.; Erenstein, O. *Agricultural Systems* 134 : 61-75.

[Speed of adoption of improved maize varieties in Tanzania: an application of duration analysis.](#) 2015. Beyene, Y.; Kassie, M. *Technological Forecasting and Social Change*. Online First.

# Social Media Corner

Keep up with CIMMYT’s online presence at the Social Media Corner. Each week, we will select and feature the top posts, mentions and followers from CIMMYT’s social media platforms. Be sure to follow us on our accounts, listed below:

**f CIMMYT**  
11,611 Followers

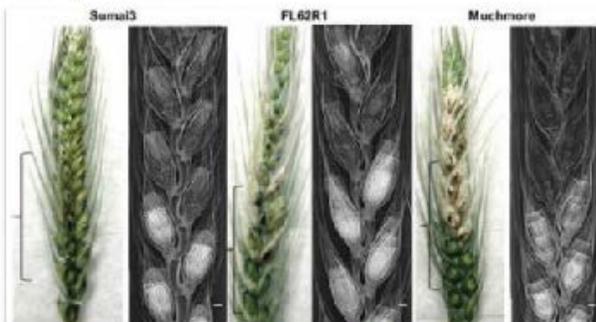
**+95**  
Followers this week

**@CIMMYT**  
11,278 Followers

**+303**  
Followers this week

## Top Post

#WheatNews Fusarium head blight (FHB), a fungus that attacks the head of the wheat plant, has been identified by scientists at the National Research Council Canada, University of Saskatchewan.  
<http://bit.ly/wheatresistance>



### Cause of wheat resistance to scab discovered

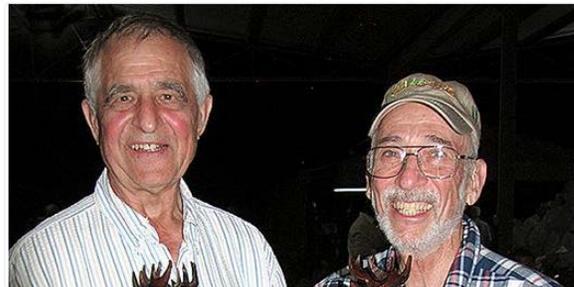
A nasty disease that can wreak havoc on wheat crops has been identified by scientists, allowing plant breeders to develop better varieties with higher yields for farmers.

PHYS.ORG

On Facebook, our followers showed interest in a Phys.org [story](#) announcing the discovery of what causes the havoc-wrecking wheat disease Fusarium Head Blight. Over 148 people “liked” the post, and 57 shared it. Overall, Facebook data shows that the post reached 4,930 people.

## Top Tweet

**CIMMYT** @CIMMYT · May 5  
Honoring Wheat Scientists Dubin and DePauw and the Yaqui Valley Legacy  
[bit.ly/1zKkxOp](http://bit.ly/1zKkxOp) #Blog



← 6 ★ 6 || ...

This week, CIMMYT’s Twitter followers were most engaged by last week’s Informa [article](#) “Honoring Wheat Scientists Dubin and DePauw and the Yaqui Valley Legacy.” The post received six retweets and six “favorites.”