



## Minnesota Expertise Critical to Safeguarding Global Wheat from Ug99

Minnesota is the epicenter of wheat rust research. Scientists at the **University of Minnesota** (U of M) and the USDA-ARS Cereal Disease Laboratory (CDL) in St. Paul are foot soldiers in the battle to save the world's wheat crop from Ug99, a virulent strain of wheat stem rust fungus that could cause widespread famine. With 25 faculty members working on cereal rust, the U of M is recognized as one of the strongest institutions in the world working on rust diseases. The CDL on the St. Paul campus is one of only two labs in the world that can receive and conduct race identification of foreign rusts. Furthermore, a new greenhouse is under construction that will increase the CDL's capacity to work on this humanitarian threat.



Photo Courtesy of Courtesy DRRW Project

### Widespread Threat to Food Production

About 90 percent of the world's wheat has little or no protection against Ug99, a new race of wheat stem rust first discovered in Uganda in 1998. Nearly a third of the world's calories come from wheat, so widespread infestations of Ug99 portend severe famine in many parts of the globe.

Since its discovery in East Africa, the deadly Ug99 spores have spread to Kenya, Ethiopia, Sudan, Yemen and Iran. The possibility of it spreading to Pakistan and India is very high, and now that it's reached South Africa it could reach Australia and the Americas via jet stream winds.

### Mobilizing Scientists Worldwide

Before he died, Nobel Peace Prize Laureate **Norman Borlaug** recognized the threat and raised the call of arms to mobilize an international effort to combat Ug99. Founded in 2005, the Borlaug Global Rust Initiative (BGRI) has led to the largest international coalition of governments and scientists ever assembled to fight a plant disease.

Borlaug, whose alma mater is the University of Minnesota, battled stem rust in the past. Borlaug bred high-yielding, rust-resistant wheat in the 1950's and 1960's, after the pathogen had claimed 40 percent of the wheat crop in the U.S. and Canada. Borlaug tapped into Minnesota wheat lines as he worked on developing resistant varieties. He saved millions of people from starvation worldwide with rust resistant varieties that also improved yields. Since the Green Revolution, investment in wheat research dwindled and only one USDA-ARS scientist was working on wheat rust at the time Ug99 was identified. Borlaug knew that he had to change quickly.

**"It's not a matter of if, but when Ug99 will reach North America."**

**The whole wheat industry wants to find an answer to Ug99 before it gets here."**

*— David Torgerson, Minnesota Association of Wheat Growers*

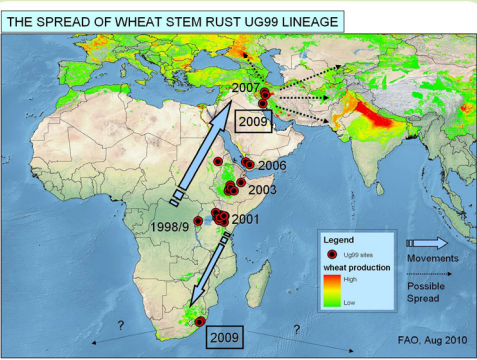
One of the biggest efforts to come out of BGRI is the Durable Rust Resistance in Wheat (DRRW) project, established in 2008 to mitigate the threat of Ug99 by developing durably resistant varieties. With funding of \$66.8 million from the Bill and Melinda Gates Foundation and the United Kingdom's Department for International Development, DRRW is one of the biggest investments ever made to fight a crop disease globally. Beyond DRRW's investment, the USDA-ARS will invest \$20 million over five years specifically on wheat stem rust research and many universities and foreign governments are also investing significant dollars in the effort to neutralize Ug99.

"We're very concerned about Ug99 reaching south Asia where there is such a high concentration of wheat production and such a vulnerable population. Millions of lives are at stake," says **Ronald Coffman**, director of DRRW.

### Minnesota's Role

The Cereal Disease Lab in St. Paul plays a central role in the Durable Rust Resistance in Wheat project and works closely with U of M researchers and the BioSafety Level 3 (BSL3) lab to

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# Member In Focus

**Company:** Briggs and Morgan, P.A.

**Website:** [www.briggs.com](http://www.briggs.com)

**Locations:** Offices located in Minneapolis and St. Paul, Minnesota.



Briggs and Morgan, Professional Association, is a trusted name in business law and litigation services. With offices in Minneapolis and St. Paul, Minnesota, the firm has more than 180 attorneys committed to providing superior client service and sound legal counsel to clients nationwide. Briggs and Morgan ranks among The NLJ 250 as one of the nation's largest firms and has received numerous accolades, including

recognition by Corporate Counsel and top clients as a "Go-To Law Firm®" in the areas of litigation, corporate transactions, corporate governance, and labor and employment. The firm and its attorneys also have been selected for publication in The Best Lawyers in America and Chambers USA. Briggs is a founding member of Lex Mundi, the world's leading association of independent law firms, and serves as the exclusive member firm for Minnesota.

## Q & A with Lauren E. Lonergan, Shareholder, Head of Briggs and Morgan's Business Litigation Section:

### What recent legal trends are affecting agribusiness?



Aside from the historical legal issues faced by agribusiness, we are seeing even greater governmental enforcement across many business sectors, but this especially holds true for agribusiness. With the passage of the new food safety regulations, we have observed aggressive enforcement by the FDA and USDA. The United States Department of Justice has teamed up with the USDA to probe potentially anticompetitive practices in the agri-

business sector. At the same time, federal antitrust regulators have taken a very tough position on any consolidation attempts in agribusiness. Enforcement by state and federal environmental agencies also has never been stronger. Further, the Department of Homeland Security's Immigration and Custom's Enforcement (ICE) office has recently launched investigations of thousands of employers; and, employers continue to be confronted with compliance with federal regulations, such as the Fair Labor Standards Act.

In addition to greater pressure from governmental entities, we have observed that animal rights groups such as the Humane Society of the United States (HSUS) have put considerable pressure on the animal welfare practices of agribusiness. California's passage of Proposition 2 will change the way agribusiness operates both inside California and for any company that sells or distributes in California. And other states have adopted similar, but less stringent laws. Recently, HSUS entered into agreements with an agribusiness trade association to propose federal legislation that would mandate animal welfare standards nationwide.

We also have observed an increase in civil litigation brought by private plaintiffs involving agribusiness and food companies. There has been a sharp rise in the number of consumer class actions involving nutritional labeling claims. In recent years, we also have seen a number of antitrust class ac-

tion filings against agribusiness, including lawsuits involving fertilizer, tomatoes, eggs, mushrooms, potatoes, milk and cheese. Several of these actions involve Capper-Volstead cooperatives in which plaintiffs are challenging whether Capper-Volstead immunity applies.

With increasing price volatility in commodity prices, we have observed more buyers of agricultural inputs and sellers of outputs breaching oral purchase agreements to obtain more favorable pricing on the spot market. As a result, producers and dealers have moved toward written purchase agreements to minimize their risks and increase the enforceability of contracts.

### How does Briggs and Morgan serve agribusiness companies?

Briggs and Morgan is a full-service law firm. We assist clients in obtaining and structuring financing, as well as other business planning issues; and we provide a whole range of antitrust counseling and litigation, including guiding clients through the regulatory process involved in consolidation, advising on Capper-Volstead immunity issues, and evaluating the legality of joint ventures and non-compete agreements. We assist our clients in the drafting, negotiation and enforcement of supply, distribution and purchase agreements; and we handle litigation and recall issues for our agribusiness clients, including insurance coverage disputes, food borne illness and product liability claims, contractual disputes and a variety of other litigation issues, including employment litigation. In addition, we provide employment counseling to help our clients navigate state and federal work-place regulations, as well as draft employment agreements, policies and manuals for our clients.

We also assist our clients in a variety of regulatory compliance issues. And, in the unfortunate occurrence that a client becomes the target of a governmental investigation, we help safeguard our clients' sensitive business information by guiding our clients through compliance with subpoenas and other requests for information. To learn more about our experience, specific to the food industry, visit our website, [www.briggs.com](http://www.briggs.com).

# President Kaler Gives Agri-Growth his Outlook on Agriculture

*The new University president shares his vision for the future of agriculture at the U of M.*

Last month **Eric W. Kaler** assumed the presidency of the **University of Minnesota** (U of M). President Kaler earned a B.S. degree, with honors, in chemical engineering from the California Institute of Technology in 1978 and a Ph.D. in chemical engineering from the University of Minnesota in 1982.

President Kaler received one of the first Presidential Young Investigator Awards from the National Science Foundation in 1984 and has received numerous other awards for his research, including the American Chemical Society (ACS) Award in Colloid or Surface Chemistry in 1998. He is a fellow of both the American Association for the Advancement of Science and the ACS. Further, he has authored or co-authored more than 200 peer-reviewed papers and holds ten U.S. patents.

A month into his new position as president of the University of Minnesota, the **Agri-Growth Council** sat down with President Kaler to hear about his perspective and plans for agriculture at the University of Minnesota.

## Q&A WITH UNIVERSITY OF MINNESOTA PRESIDENT KALER:



**Q: What does “agriculture” mean to you, both personally and for the University of Minnesota?**

A: I absolutely am a city boy, my mother grew up on a farm in southern Indiana, and I understand the special farming heritage in Minnesota. During my time at the University of Delaware, I learned a lot about the poultry industry (Delaware produces over 200 million broilers a year), and about the sophistication, scale, and complexity of modern agriculture. With ten patents of my own, I care about product development.

I also know that agriculture is a very significant and complex part of the University, too, and I need to better know and more fully understand the many issues, challenges and opportunities within the ag community. I want to be your partner and I want the U of M to be a critical part of the ag community’s success.

**Q: What role does the University of Minnesota serve in the state’s agriculture industry?**

A: When the University was established in 1851, agriculture was a key component of our mission, and with the Morrill Act in 1862 it became a central part of the University’s land-grant status. It continues to be a major aspect of what we do.

Over the years that mission has evolved – just as the needs of our state have evolved – but we are still home to the state’s only **College of Veterinary Medicine**, we do world renowned plant and soil research, we have 16 regional Extension offices, we are the lifeline to 4-H and the youth in our communities, we work with you on business retention and expansion, and our **College of Food, Agricultural and Natural Resource Sciences** (CFANS) has nine Research and Outreach Centers across the state.

As a globally recognized public research university, we are leaders in groundbreaking food safety and food science research and development.

We are proud of this heritage and proud of producing scholars, researchers and well-trained young people to be your employees and partners in the state’s second-largest industry, which produces an extraordinary \$16 billion worth of income from agricultural marketing in the state.

Graduates of CFANS are successful members of your industry. More than 80 percent of CFANS graduates are employed within six months of earning their degrees. We regularly hear from you about the need for workforce development. You embrace our graduates.

We offer the only program in the state that licenses K-12 ag teachers. We train the trainers.

We also regularly make the case in public debate for the importance of agricultural research and development. **Phil Pardey**, a professor in our **Applied Economics Department**, has recently published a study that found that federal and other public investment in agricultural research improves productivity and, ultimately, lowers food prices in a world in which food prices are soaring.

Just like state funding for the University – and all public higher education – is at a critical crossroads, so is U.S. agricultural research and development. We want to continue to be leaders in agricultural research.



The Minnesota Agri-Growth Council is an advocate for the state’s food and agriculture industry. Founded in 1968, the Council is a nonprofit, nonpartisan organization that represents the shared interests of its 200-plus members, which include food and agriculture businesses, organizations and producers, as well as the service industries that support them.

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Minnesota Agri-Growth Council Newsletter

**Q: What experiences or thoughts do you have about land grant institutions and extension outreach?**

A: Of course, one of the key elements of the Morrill Act, which established land grant institutions, was to promote practical education in the area of agriculture. And the Smith-Lever Act later formalized the **Extension Service**. We are committed to that, with two-thirds of Extension's 800 researchers, educators and staff living and working in Greater Minnesota.

We also understand that Extension provides the front door to the University for many Minnesotans, with more than 34,000 volunteers, 700,000 annual program participants and 13 million website visits per year. We want to keep that door open and welcoming.

And our Research and Outreach Centers translate research breakthroughs into useful information and products for Minnesota producers and agribusiness.

**Q: How will you address multiple years of reduced state funding for the University of Minnesota and what impact will that have on CFANS and the other agriculture-related entities at the University?**

A: Over the past 15 years we have experienced painful cuts to our overall University budget. In the most recent legislative session, we took an almost eight percent reduction.

Despite even larger cuts than that to our state special funding for our agriculture programs, we have continued to make sure that CFANS doesn't experience a disproportionate cut to its budget.

We value CFANS tremendously. Like all of our colleges, it receives funding based on productivity and performance. Meanwhile, we continue to develop partnerships with industry groups, and we are investigating endowments to help us as state funding continues to decline.

The state now supplies only 18 percent of our budget. When I was a graduate student at the U of M in 1978, state funding amounted to about 43 percent of overall funding. The conversation with the decision makers in the state has to change the direction of that trend.

**Q: How do you plan to connect with the agriculture community in Minnesota?**

A: Regularly and thoughtfully.

Here's a good example: One month into my administration I

took my first community visit out of the Twin Cities. It was focused on agriculture. I travelled to Marshall, a thriving regional center in Greater Minnesota with a regional Extension office. There, I spoke to business and agricultural leaders at the Marshall Rotary.

I also met with the chairmen of both the House and Senate agriculture committees, and the vice chairman of the Senate agriculture committee.

I toured Newport Labs in Worthington where University alumni are performing terrific work to ensure that veterinarians and livestock producers are equipped with cutting-edge preventive, diagnostic and educational tools.

The next day I visited Farmfest and met with many folks there, including leaders of commodity groups. I then stopped in on the next generation of agricultural scientists and producers when I chatted with junior high and high school students at the Southwest

Research and Outreach Center in Lamberton, who were being taught by U professors at an extraordinary program called University on the Prairie.



President Kaler talked with kids taking part in University on the Prairie. They presented President Kaler with a research sample.

I plan to develop strong working relationships with many lawmakers, policy makers and the Governor on agriculture issues, especially as they pertain to educating our students and conducting vital research and development on our campuses.

**Q: Do you plan to continue the tradition that President Bruininks started of hosting an annual breakfast at Eastcliff for state agriculture leaders?**

A: I'd love to continue to host the annual breakfast.

One request: Can you bring the farm fresh eggs?

Seriously, I look forward to seeing you there to strengthen the partnership between Minnesota's critical and vibrant agricultural community and the University of Minnesota.

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## MINNESOTA EXPERTISE CRITICAL TO SAFEGUARDING GLOBAL WHEAT FROM Ug99, CONTINUED FROM PAGE 1:

identify international races of stem rust and screen material for resistance. The CDL also houses the largest and most diverse collection of rust in the world with more than 30,000 rust cultures gleaned from every continent.

The CDL can only receive and conduct race identification of foreign rusts during the dead of winter. Minnesota's cold winters ensure that Ug99 won't

**"THE CEREAL DISEASE LAB IS LIKE A MAYO CLINIC FOR RUST DISEASES."**

— *Rollin Sears, Syngenta*

survive and infect nearby wheat crops. Other precautions include the bagging and autoclaving of all plants and material being studied. In the BSL3 lab, further precautions include isolation chambers, HEPA filters to catch spores, and showers and special suits for researchers.

To increase its testing capacity five-fold during those precious winter months, the CDL is building a new \$4.5 million 2,880-square-foot greenhouse. The greenhouse will also be used to train visiting scientists so they can learn how to identify races of the pathogen in their own countries.

### Advancements

Recently, the CDL developed a 24-hour DNA diagnostic test for the Ug99 family of rust isolates that can be used by regional pathology labs. Prior to that the identification process took two weeks.

Minnesota researchers have been instrumental in identifying seven variants of Ug99. That knowledge helps researchers develop breeding strategies that will be more durable. They now know that Ug99 can overcome single gene resistance in just a couple of years so researchers are working on developing varieties with multiple resistance genes. They believe the most durable resistance will come from varieties that have both major and minor plant resistance genes stacked in the same plant.

"We are so fortunate that our state and university invested in plant pathogen

containment facilities that allow us to make these advances," says **Carol Ishimaru**, head of plant pathology at the U of M. "We are the best positioned group to work on this." The BSL3 lab was opened in 2009 to work on Ug99, sudden oak death and Asian soybean rust.

"The Cereal Disease Lab is like a Mayo Clinic for rust diseases," says **Rollin Sears**, **Syngenta's** research and development lead for cereals in North and South America. "It is a major information source for public and private breeding programs. They conduct rust surveys throughout the U.S. and screen a number of breeding lines, including our lines, for leaf, stem and stripe rust. It serves a highly useful purpose." Syngenta is the largest wheat company in North America and it is collaborating with the International Maize and Wheat Improvement Center (CIMMYT) and the DRRW project to identify new adult plant resistance genes using molecular markers. Syngenta provides the technology platform and capabilities to identify genetic markers and map genes.

"The work being done on rust at the USDA-ARS Cereal Disease Lab in St. Paul affects all wheat producers and it's the focal point for rust work in the U.S.," says **David Torgerson**, executive director of the Minnesota Association of Wheat Growers.

"It's not a matter of if, but when Ug99 will reach North America. The whole wheat industry wants to find an answer to Ug99 before it gets here."

USDA-ARS provides surveillance and monitoring in the U.S. for any new wheat stem rust strains. Over the past five years, it has tested more than 14,000 lines of U.S. wheat and barley for Ug99 resistance in field nurseries in Kenya. "We are very much committed to the international effort to combat this new pathogen and to be prepared if it ever comes to the U.S.," says Kay Simmons, USDA-ARS. "It's a major undertaking. We have to get resistance genes into about 100 varieties to cover all the types of wheat and regional needs in the U.S."

From November to the end of March, **Brian Steffenson**, U of M professor and plant pathologist and his colleagues work in the greenhouse and BSL3 lab to screen various wheat and barley lines as well as wild relatives for resistance to Ug99. In mid-October and March, he is screening lines in field nurseries in Kenya and South Africa. "It's a huge numbers game. We have to screen many lines to find the resistance genes," he says.



Photo Courtesy of Courtesy DRRW Project

Brian Steffenson checked on the rust resistance of new varieties of wheat from the Minnesota wheat breeding program during the rust scoring workshop at the Kenya Agricultural Research Institute.

Then the genes need to be back-crossed into current experimental lines and the most popular spring and winter wheat varieties. U of M wheat breeder **Jim Anderson** says they currently have five breeding lines with two resistance genes stacked in the lines that could be commercialized in two to three years if Ug99 makes it to the Midwest.

Internationally, there is good news. Five years into the battle, CIMMYT has several new varieties that have resistance to all three rusts of wheat; stem rust, stripe rust and leaf rust. Some yield 10-15 % more than current cultivars in India and Pakistan. Now foreign governments must invest in seed production for their farmers.

The USDA estimates that more than 40 million acres of wheat could be affected if it reaches the U.S. Minnesota raises 1.6 million acres of wheat, mostly spring wheat, and is among the top ten wheat-producing states. ■



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## Agri-Growth Participates in Environmental Initiative’s Water Quality Dialogue

Agri-Growth’s President, **Daryn McBeth**, has been participating in a dialogue group convened by Environmental Initiative (formerly known as MEI) working to develop a “shared understanding” of agriculture’s role in addressing issues related to water quality in Minnesota. The group was convened at the request of state agencies and environmental organizations. The Minnesota Ag Water Resources Coalition lead by **Warren Formo** has also contributed funding to the effort.

The first phase of the dialogue meetings convened agriculture representatives only, who completed their fact finding and list of principles on August 9. The next phase will bring agriculture representatives together with state agency officials and environmental leaders to further discuss common goals. Likely representing agriculture in the next round of eight scheduled meetings will be **Dave Preisler, Minnesota Pork Producers; Mike Youngerberg, Minnesota Soybean Growers; Chris Radatz, Minnesota Farm Bureau; Thom Petersen, Minnesota Farmers Union; Warren Formo; and Loretta Jaus, Organic Valley.**

“Phase I of the dialogue meetings have been helpful in pulling crops and livestock water interests together. I will be interested to see how the information we developed is received by environmental groups in Phase II.”

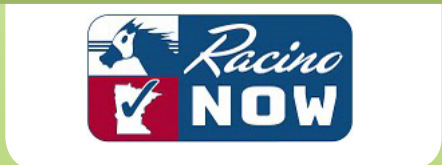
– Daryn McBeth



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- Bennett Government Consulting
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