

THE NATIONAL ASSOCIATION OF WHEAT GROWERS

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NEWS RELEASE

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Loss Of New Genotyping Center Would Be Wheat Research Setback

Washington, DC— Wheat researchers and industry leaders hope to save a new federal center that provides high-tech help for breeding better wheat varieties. The genotyping center based in Manhattan, KS. Got underway with \$250,000 in federal funding for fiscal year 2001, but is not included in the Administration's proposed budget for FY2002.

Losing the center would be a wheat research setback, says David Van Sanford, wheat breeder at the University of Kentucky.

“The genotyping center has the potential to completely streamline the wheat breeding process by identifying molecular markers linked to important traits of interest, such as Fusarium head blight resistance,” he says. Fusarium head blight (FHB, or scab) is a serious fungal disease that has resulted in wheat and barley losses in at least 18 states since 1993, valued conservatively at over \$2 billion, according to university and industry estimates.

Less than a year after its inception, the lab in Manhattan is already providing data that is helping Van Sanford determine if soft red winter wheat lines being developed in his breeding program contain genes common with Sumai 3. This is a FHB-tolerant Chinese wheat cultivar that many U.S. wheat breeders are using to breed new wheat lines with greater scab resistance. “The new lab essentially helps us to screen lines for scab resistance more quickly and more efficiently,” says Van Sanford, who serves as chairman of the National Wheat Improvement Committee.

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The technology being employed at the center is essentially the same as what is being used for the human genome project. Marker-assisted selection is not the same as modifying organisms through biotechnology, however. Molecular markers are essentially a tremendously accurate means of “fingerprinting” germplasm, enabling scientists to identify and keep track of genetic traits during the course of wheat breeding, then to select plants in wheat populations that have desired characteristics, based on the pattern revealed by the molecular markers.

“It’s letting us fingerprint chromosomes so we can more rapidly deploy the Sumai 3 and other resistance genes in wheat varieties. We can evaluate progeny without having to grow them out, and determine with preciseness that there’s resistance to FHB or another problem. What would otherwise take years in a breeding program can be accomplished in one step,” says Rick Ward, wheat breeder at Michigan State University.

Ward says the center offers a centralized source where wheat and barley researchers from different states can turn to for marker-assisted selection to help develop better varieties.

“Economies of scale are at work here. You can burn up the budget of an entire wheat breeding program in two weeks with genotyping equipment, and no one breeder can possibly generate material to occupy the center over the course of a year. So it’s a better use of resources if we can have regional centers such as this that enable multiple crop breeding programs access to fingerprinting capacity that otherwise wouldn’t be available,” says Ward, who also serves as co-chair of the U.S. Wheat and Barley Scab Initiative, a coordinated national research effort to find solutions to the serious fungal disease in wheat and barley.

The high-tech research being established at the genotyping center comes with high initial capital investment costs. The first year of federal funding was not enough to cover equipment expenses, so the center now shares equipment already on site that was purchased by the Kansas Wheat Commission and Kansas State University, according to David Frey, administrator of the KWC. “It would be unfortunate to see a substantial investment made in setting up a genetic research lab that may not exist next year,” says Frey.

Although the center is less than a year old, it has already assisted public wheat breeding programs in Ohio, Kentucky, Maryland, North Carolina, and Nebraska. The center is initially providing marker-assisted selection assistance for resistance of disease and insects in wheat. However, the technology can also be used to help wheat breeders identify desired quality traits as well, such as increased protein content, says Van Sanford.

Maintaining funding for the genotyping center at Manhattan and other key wheat research facilities in the United States is a key objective of the National Association of Wheat Growers, says Mike Bruer, the NAWG's research committee chairman and a Minnesota wheat producer.

The genotyping center in Kansas was established as a prototype for similar genotyping centers that the NAWG would also like to see established in Fargo, N.D., Pullman, WA, and Raleigh, N.C., to provide marker-assisted technology assistance for crop scientists in different regions of the country.

“Many of today's top companies, from Wall Street and Detroit to Seattle and the Silicon Valley, will tell you that it's research and development that keeps them at the forefront of their respective industries. The same goes for the wheat industry. As producers, we are dependent upon R&D to help keep us competitive in the global marketplace,” says Bruer.

NAWG is a nonprofit organization representing U.S. wheat growers who, by combining their strengths, voices, and ideas are working to ensure a better wheat industry for today and tomorrow.

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