

Plant pathologist finding Kansas wheat fields a molecular battleground this season

June 22 2011

With harvest in full swing, many farmers have found that the brutal combination of high winds, scorching temperatures and minimal rainfall has left most wheat yields looking less like the good or the bad and more like the ugly.

But as a Kansas State University plant pathologist is finding in a statewide study, Kansas [wheat](#) this year also has been battling a much smaller opponent: [viruses](#).

"We're still analyzing samples, but it's turning out that the viruses in wheat are extremely abundant this year," said Anna Whitfield, an associate professor of plant pathology who studies the plant-virus-vector interactions at the molecular level. Whitfield's extensive research in this area led to the Ad Astra Kansas Initiative this month to name her one of the state's top 150 scientists of past and present. So far Kansas State has had seven active faculty members named as top scientists in Kansas.

This summer Whitfield is part of a small collaboration that for six months has been investigating the diversity of wheat-infecting viruses across the state. The study, "Enabling Biotechnological Breakthroughs for Effective Control of Wheat Virus Diseases in Kansas," is intended to find what are the most important viruses infecting Kansas wheat, as well as what the yield losses are to those [viral diseases](#).

"For more than 30 years wheat testing has been based on visuals," Whitfield said. "With this study we're able to take samples back to the

lab to test for those diseases that can't be seen by the naked eye. The thought is that there are other viruses out there, and we're finding that's the case."

In an effort to detect these viruses, Whitfield and colleague Dorith Rotenberg, research assistant professor, are testing nearly 800 plant tissue samples collected throughout Kansas. The duo tests the samples through a process called enzyme-linked immunosorbent assay, or ELISA for short. ELISA uses antibodies to detect [viral proteins](#) that may be in the plant tissue.

The study ends in August and is being funded by a grant from Heartland Plant Innovations Inc., a Manhattan-based company. Also working on this study are William Bockus, professor of plant pathology; Erick De Wolf, associate professor of [plant pathology](#); John Appel, plant pathologist at the Kansas Department of Agriculture; and a team of student researchers.

Whitfield is also continuing work on the tomato spotted wilt virus, the wheat streak mosaic virus and the maize mosaic rhabdovirus -- three diseases that are largely spread by arthropods and insects to plants, and result in large crop losses. Her work on the insect interaction with these viruses has been earning Whitfield other recognition as an-up-and-coming scholar in the field.

Provided by Kansas State University

Citation: Plant pathologist finding Kansas wheat fields a molecular battleground this season (2011, June 22) retrieved 25 April 2024 from <https://phys.org/news/2011-06-pathologist-kansas-wheat-fields-molecular.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.