

Nebraska Soybean Board

Year-End Summary Research Report Form For Multi-Year Projects

Please use this form to summarize the practical benefits of your research project and what has been accomplished.

Your answers need to convey why the project is important and how the results will impact soybean production.

Note that this form must be submitted with the 4th Quarter Report in all multi-year projects.

Project # and Title: Survey and rapid diagnostics for fungicide resistant Frogeye Leaf Spot in Nebraska

Principal Investigator: Tamra Jackson-Ziems (formerly Sydney Everhart)

Year of Multi Year: 2 of 3 (For example: Year 1 of 3, Year 2 of 2)

1. What was the focus of the research project or educational activity?

This project was designed to survey and test frogeye leaf spot disease of soybean in Nebraska for Class 11 QoI fungicide resistance that's impacting numerous other states. Additional objectives of this project were to develop a rapid laboratory assay to test frogeye leaf spot samples for QoI fungicide resistance in a little as 2-3 hours versus several days required for traditional bioassays. Finally, the proposed research will seek to characterize the population structure and genetic diversity of *C. sojina* populations in Nebraska fields.

2. What are the major findings of the research or impacts of the educational activity?

The focus of this project is to develop a DNA-based protocol for rapid identification of Class 11 QoI (formerly called strobilurins) fungicide-resistant *Cercospora sojina*, that causes frogeye leaf spot disease of soybean. 375 samples of frogeye leaf spot were collected or submitted from soybean fields in 48 Nebraska counties. The fungus was isolated from samples and tested for QoI fungicide resistance using both traditional bioassays and a new rapid diagnosis of FLS fungicide resistance at no cost to the grower. The new rapid assay confirmed the results from the traditional bioassay requiring only 2-3 hours to complete for a more rapid turnaround. Results confirmed Group 11 QoI fungicide resistance in the frogeye leaf spot fungus in ALL 48 counties where samples were collected at a rate of 98%. These results have been and will continue to be shared widely with stakeholders in Nebraska via multimedia outreach platforms via Nebraska Extension and partners to help them more effectively and efficiently manage frogeye leaf spot disease of soybean.

3. Briefly summarize, in lay terms, the impact your findings have had, or will have, on improving the productivity of soybeans in Nebraska and the U.S.

These results will help Nebraska soybean producers select more effective foliar fungicides, especially those with active ingredients from mixed fungicide classes and to use alternative strategies to manage frogeye leaf spot. Knowing that QoI (strobilurin) fungicides are ineffective when used alone, will help producers to select other more effective fungicides for frogeye leaf spot control thereby reducing input costs and reducing selection pressure on other pathogens that can also become resistant to fungicides. Producers may also have samples from their fields tested more rapidly than ever before for fungicide resistance to help them better select more effective fungicide products.

4. Describe how your findings have been (or soon will be) distributed to (a) farmers and (b) public researchers. List specific publications, websites, press releases, etc.

These results have been (and will continue to be) distributed to stakeholders for months via field days and supplemental videos (South Central Ag Lab and Soybean Management Field Days and the UNL ENREC Midwest Soybean Production Clinic), winter meetings (Crop Production Clinics, Nebraska Crop Management Conference, Nebraska AgBusiness Assoc Winter meeting, Northwest Missouri Regional CCA Conference, Nebraska Aviation Trades Assoc recertification, and more), CropWatch Podcast, SoybeanNebraska magazine, radio interviews (UNL-Ag Almanac, Brownfield Ag, and AgPhD, social media, etc.

5. Did the NE soybean checkoff funding of your project, leverage additional State or Federal funding support? Please list sources and dollars approved.

Unsure?

Please email this completed form to the Agriculture Research Division (jmcmahon10@unl.edu) based on the reporting schedule given to you. If you have any questions, please call Jen McMahon at the ARD 2-7082.