

Nebraska Soybean Board



11/5/2018

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 Title: #1726: Genetic Mapping of Yield Stability Genes

Principal Investigator: David Hyten

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?

The purpose of this research project is to discover regions in the soybean genome that contain genes that affect the ability of a variety to have consistently high yields across large geographical growing regions. This project will also focus on determining the best methods in a breeding program for early selection of these genes that enhance yield stability across a large growing area.

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

The quantifiable goal of this project is to provide molecular markers for yield stability genes that can be utilized in a breeding program, and provide a better understanding of the genetic basis of yield stability.

Thus far in the project, we have completed sequencing of advanced lines and collected basic agronomic and descriptive information from the first two years of yield trials. A final SNP marker dataset has been developed using sequence data and imputation techniques. This will be implemented in genetic association analyses along with the collected phenotype data to map initial locations of yield stability genes.

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.

Through incorporating yield stability genes early in the soybean breeding pipeline in combination with high yielding genes, genetic gain can be accelerated because fewer advanced lines will be eliminated in multi location yield trials due to inconsistent yields. Currently these trials do not take place until late in the breeding process.

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.

Our lab has continued to give lab tours to a variety of local, national and international groups, providing information to a range of attendees about the nature and importance of our work, including this endeavor. Specifically, this included a tour this summer to middle school teachers attending the Soybean Science Institute funded by NSB.

Work performed in the application of imputation to fill in missing SNP marker data from whole genome sequencing has been presented in the form of a poster at the 17th Biennial Conference on the Molecular and Cellular Biology of the Soybean, and the UNL Plant Science Retreat.

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

no

Please e-mail this report to the Agriculture Research Division (jmonagham2@unl.edu).