Nebraska Soybean Board
Year-End Research Findings Report

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 impact soybean production.

Project Title: Characterization of root responses to Iron Deficiency Chlorosis (IDC) in soybean

Contractor & Principal Investigator: Harkamal Walia

Please check/fill in appropriate box: ☐ ***Continuation research project***
☐ ***Year _2 of _3 research project (for example: Year 1 of 2)***

1. ***What was the focus of the research project or educational activity?*** *The focus of this research is to identify IDC tolerance related genes/alleles in soybean so they can be used to improve tolerance to soils with low iron in NE soils. The novel feature of our research is to focus on genes primarily enriched in root hair, single cell type. The significance of this technical detail is that root hair are very important for iron uptake.*

2. What are the major findings of the research or impacts of the educational activity? *We have identified a potentially interesting transcription factor (a type of gene that regulates numerous other genes and is typically higher up in the gene hierarchy), which is root hair enriched. Most importantly, it also resides in close proximity to a known QTL for IDC tolerance.*

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. *We plan to characterize the already identified gene associated with iron deficiency stress response and differ between the two soybean lines with contrasting IDC tolerance. Once we have established its role via genome editing/overexpression for IDC tolerance, this allele can be incorporated into soybean varieties for improved IDC tolerance*

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. *We are currently planning to submit a manuscript for the initial expression analysis for peer review publication (~April 2017). We will also present this work to the research community at UNL. The outcome of the project will also be provided to the NSB to disseminate to local farmers and on their website. If we find novel genes with IDC tolerance, we will proceed to secure the intellectual property for the discovery so it can be commercialized.*

5. Did the NE soybean checkoff funding support for your project leverage any additional state or Federal funding support? (Please list sources and dollars approved.) *We have an NIFA proposal pending (submitted July, 2016) with focus on root hair and abiotic stress tolerance.*

*****This form must be completed and submitted with the fourth quarter report.***