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**Innovation Grant Progress Report**

PROJECT TITLE: In-Season Potassium and Nitrogen Applications Based on Crop Demand Curve, Soil and Tissue Sampling

REPORTING PERIOD: August 31, 2018

FARMER INNOVATOR: Poppel Family Farms, LLC (Kevin Poppel)

COLLABORATING ORGANIZATION/PERSON: Central Advantage GS-Sagan King/Precision Agronomist-Kate Stenzel

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1.) PROJECT ACTIVITIES COMPLETED DURING THE REPORTING PERIOD. (*Describe project progress specific to goals, objectives, and deliverables identified in your project proposal.*)

The in-season grid soil samples that were pulled were tested both for nitrate and potassium. Utilizing these results, a variable rate prescription was created. An application of UAN and potassium thiosulfate blend was the product used late season, which correlates to the high points of the demand curve for both nitrogen and potassium. Timing of application was somewhat tricky since plants were pollinating and filling the ear, so we didn’t want to stress or burn plants during this time. It is important to minimize the amount of stress on a plant, yet hope that the plant has access to enough nutrients to feed the plant and go to the ear to maximize yield potential at this time. More research may need to be done on the balance between plant nutrient demand vs stress mitigation during this stage. Tissue samples were also pulled during this time for comparison between sampling timing and as reference of nutrient uptake.

2.) IDENTIFY ANY SIGNIFICANT FINDINGS AND RESULTS OF THE PROJECT TO DATE. (*There may be none to report at some stages of the project)*

It was interesting to compare the soil nutrient test results taken at different times of the year. Especially looking at the difference in potassium test results comparing them back to the 2.5ac grid soil tests that were taken back in 2015 for this field.

The tissue sample reports were also interesting to look at. Although most macronutrients were deficient or responsive at the time of sampling, all sample results taken within the same growth stage seemed to follow a similar trend. This helps build confidence that these test results are a good representation of nutrient uptake of the plant at this time. It also did not come as a surprise that most nutrients were showing up as deficient because there is an enormous amount of nutrients being taking into the plant and going to the ear during the time samples were taken.

3.) CHALLENGES ENCOUNTERED. (*Describe any challenges that you encountered related to project progress specific to goals, objectives, and deliverables identified in the project proposal.*)

Similar to earlier in the season, it continued to be a challenge to get operations completed in a timely matter due primarily to weather delays. On top of the delays of getting into the field, the crop was maturing at a rapid pace, so applications and sampling may not have been done at the optimal time, but it was done at the best timing that was presented this year. There were also some severe storms during this period that produced hail and excessive rain fall that will have an impact on final yield in some areas. The other limiting factor may be that since there was plentiful rain this season, as well as some historical compaction, root development may have been impacted. A smaller root zone will have an impact on the plants ability to take up nutrients and meet demand.

4.) EDUCATION AND OUTREACH ACTIVITES. *(Describe any opportunities to engage with farmers, influencers or the media about your project.)*

I think it is important and necessary to promote this type of intensive nutrient management that is being utilized. A better representation of different tools and management practices most growers are actually utilizing to manage nutrient applications on their fields needs to be done. This message needs to be portrayed better not only to the general public, but also to some within the agriculture industry. This is especially important now with the Groundwater Protection Rule in the forefront, and potential regulations on fertilizer application. It is a positive message that growers are paying attention to nutrient applications not just for economic reasons, but also environmental best management.

5.) HOW CAN WE HELP? *(Please let us know how we can improve the experience or assist in your project if possible.)*

None at this time.